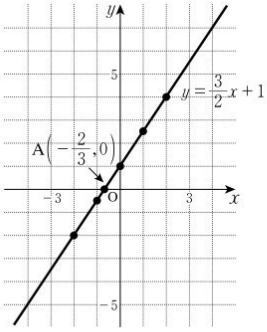
The answers start from the next page.

K 1−4

1

1.

x	y
-2	$\mathbf{-2}$
-1	$\mathbf{-\frac{1}{2}}$
0	$\mathbf{1}$
1	$\mathbf{\frac{5}{2}}$
2	$\mathbf{4}$



2.

$\boxed{-\frac{2}{3}}$

2

1.

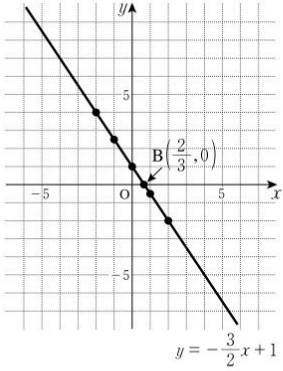
(1) E　F

(2) C　E

1

3.

x	y
-2	$\mathbf{4}$
-1	$\mathbf{\frac{5}{2}}$
0	$\mathbf{1}$
1	$\mathbf{-\frac{1}{2}}$
2	$\mathbf{-2}$



4.

$x = \frac{2}{3}$

2

2.

(1) (A)

(2) (C)

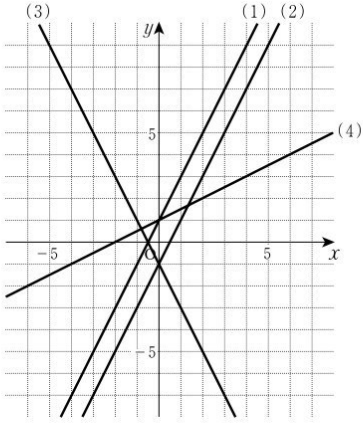
(3) (E)

(4) (B)

(5) (D)

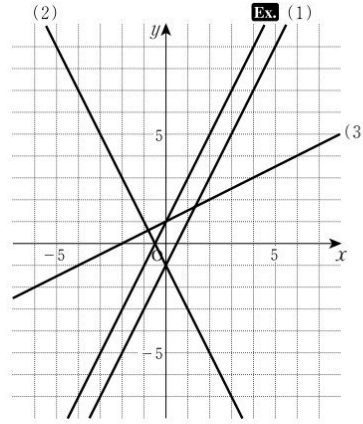
3

1.



4

1.



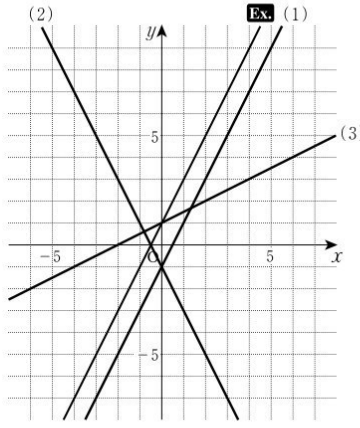
3

2.

(1) $y=2x-1$

(2) $y=-2x-1$

(3) $y=\frac{1}{2}x+1$



4

2.

(1) $y=2x-1$

(2) $y=-\frac{1}{2}x-2$

K 5−8

5

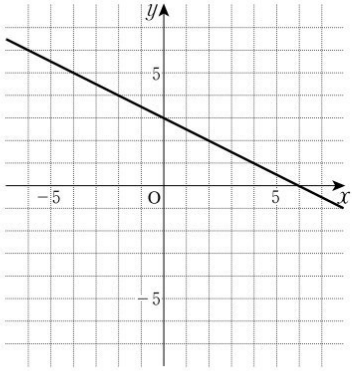
1.

(1) $y=\frac{1}{3}x+2$

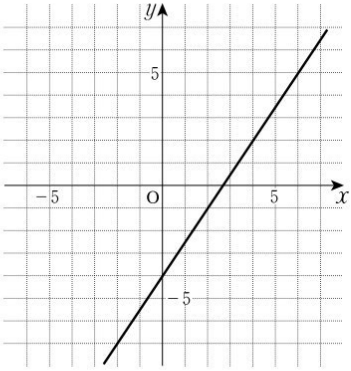
5

2.

(1) $y=-\frac{1}{2}x+3$



(2) $y=\frac{3}{2}x-4$



6

1.

(1) (A)　(5) (G)

(2) (C)　(6) (E)

(3) (B)　(7) (F)

(4) (D)　(8) (H)

6

2.

(1) $y=x+2$　(5) $y=2x+2$

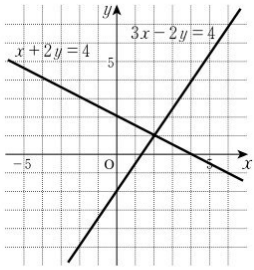
(2) $y=x-2$　(6) $y=-2x+2$

(3) $y=-x+2$　(7) $y=2$

(4) $y=-x-2$　(8) $x=2$

7

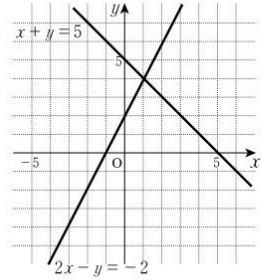
(1)



(2, 1)

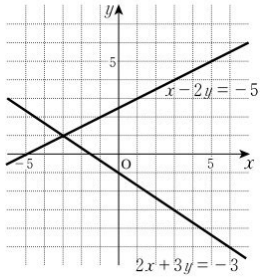
8

(1) (1, 4)



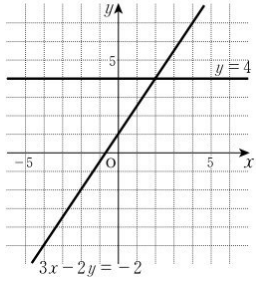
7

(2)



(−3, 1)

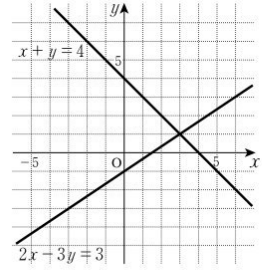
(3)



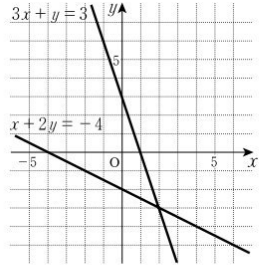
(2, 4)

8

(2) (3, 1)



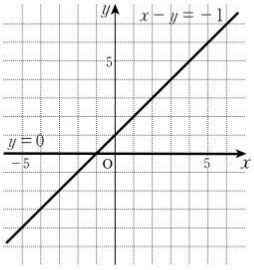
(3) (2, −3)



K 9−12

9

(1) $(-1,\ 0)$



10

1.

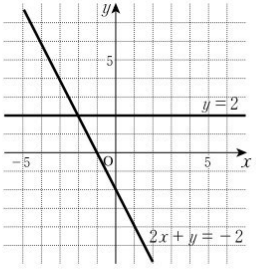
(1) $y=-2x+3$

(2) $y=-2x+3$

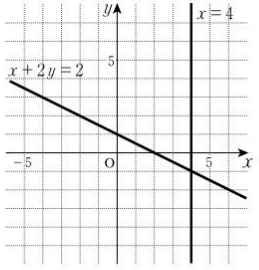
(3) $y=-2x+3$

9

(2) $(-2,\ 2)$



(3) $(4,\ -1)$



10

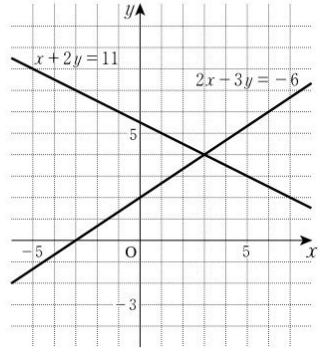
2.

① $y=2x-3$

② $y=-\dfrac{2}{3}x+2$

3.

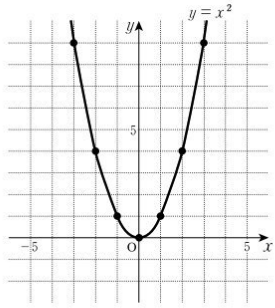
$(3,\ 4)$



11

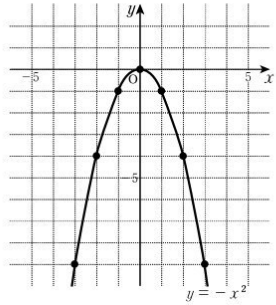
(1)

x	y
-3	**9**
-2	**4**
-1	**1**
0	**0**
1	**1**
2	**4**
3	**9**



(2)

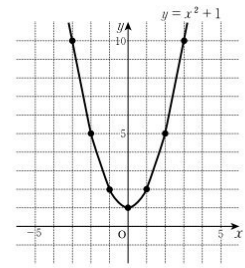
x	y
-3	**-9**
-2	**-4**
-1	**-1**
0	**0**
1	**-1**
2	**-4**
3	**-9**



12

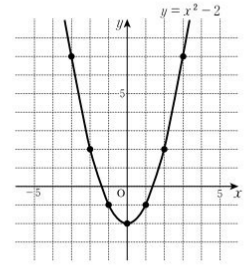
(1)

x	y
-3	**10**
-2	**5**
-1	**2**
0	**1**
1	**2**
2	**5**
3	**10**



(2)

x	y
-3	**7**
-2	**2**
-1	**-1**
0	**-2**
1	**-1**
2	**2**
3	**7**

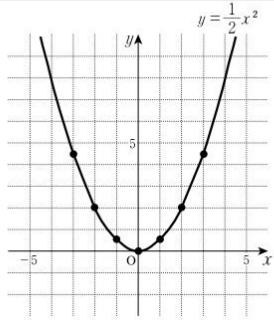


0 (0 , -2)

11

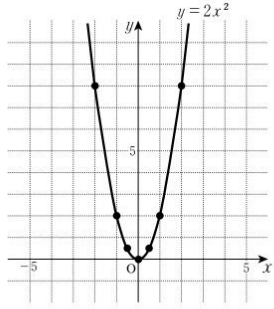
(3)

x	y
-3	**$\frac{9}{2}$**
-2	**2**
-1	**$\frac{1}{2}$**
0	**0**
1	**$\frac{1}{2}$**
2	**2**
3	**$\frac{9}{2}$**



(4)

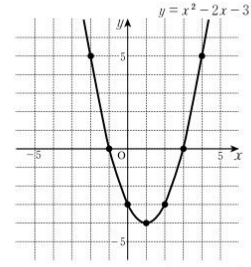
x	y
-2	**8**
-1	**2**
$-\frac{1}{2}$	**$\frac{1}{2}$**
0	**0**
$\frac{1}{2}$	**$\frac{1}{2}$**
1	**2**
2	**8**



12

(3)

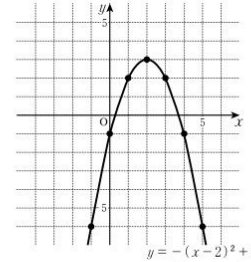
x	y
-2	**5**
-1	**0**
0	**-3**
1	**-4**
2	**-3**
3	**0**
4	**5**



-4

(4)

x	y
-1	**-6**
0	**-1**
1	**2**
2	**3**
3	**2**
4	**-1**
5	**-6**



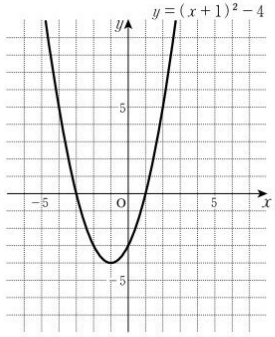
3

K 13−16

13

(1)

x	y
−4	**5**
−3	**0**
−2	**−3**
−1	**−4**
0	**−3**
1	**0**
2	**5**

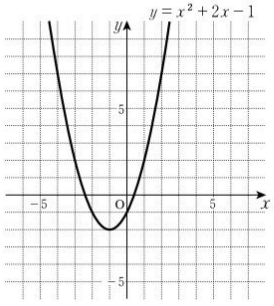


-1　$(-1, -4)$

14

(1) $x=-1$

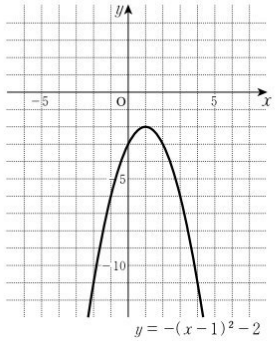
$(-1, -2)$



13

(2)

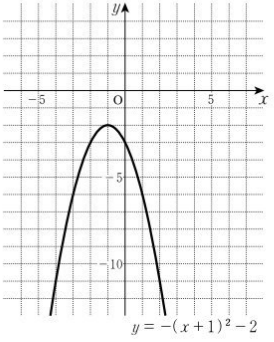
x	y
−2	**−11**
−1	**−6**
0	**−3**
1	**−2**
2	**−3**
3	**−6**
4	**−11**



$x=1$　$(1, -2)$

(3)

x	y
−4	**−11**
−3	**−6**
−2	**−3**
−1	**−2**
0	**−3**
1	**−6**
2	**−11**

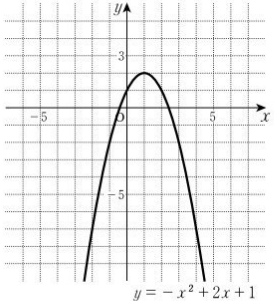


$x=-1$　$(-1, -2)$

14

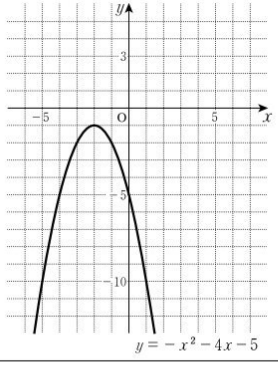
(2) $x=1$

$(1, 2)$



(3) $x=-2$

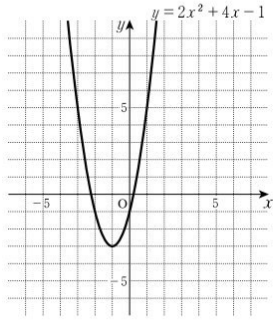
$(-2, -1)$



15

(1) $x=-1$

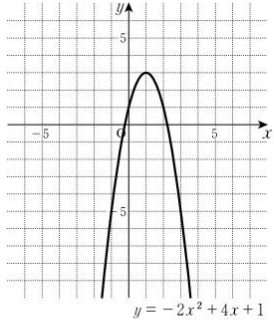
$(-1,\ -3)$



15

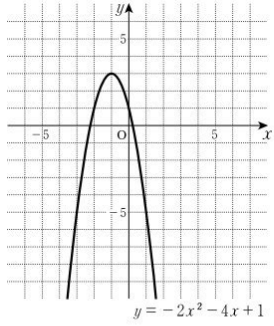
(2) $x=1$

$(1,\ 3)$



(3) $x=-1$

$(-1,\ 3)$



16

1.

(1) $x=0$

(0 , 0)

(A)

(2) $x=0$

(0 , −3)

(B)

(3) $x=2$

(2 , −4)

(D)

(4) $x=3$

(3 , 3)

(C)

16

2.

(1) $x=2$

(2 , 1)

(C)

(2) $x=-2$

(−2 , 1)

(A)

(3) $x=-2$

(−2 , −1)

(B)

(4) $x=2$

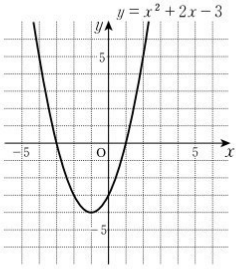
(2 , −1)

(D)

K 17−20

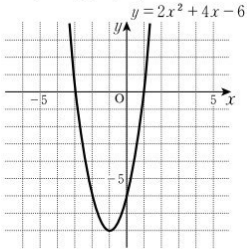
17

(1) (−3, 0), (1, 0)

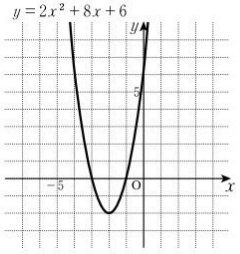


18

(1) (−3, 0), (1, 0)

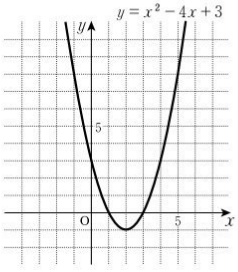


(2) (−3, 0), (−1, 0)

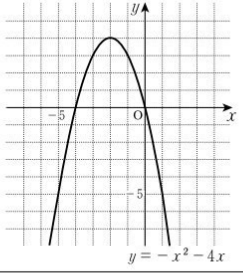


17

(2) (3, 0), (1, 0)

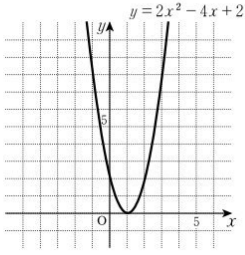


(3) (0, 0), (−4, 0)

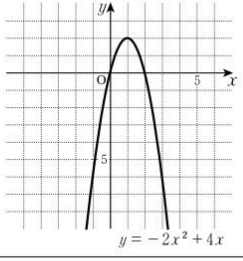


18

(3) (1, 0)

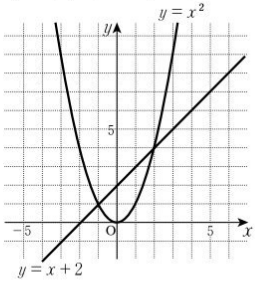


(4) (0, 0), (2, 0)



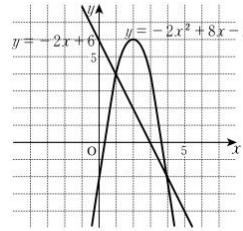
19

(1) (2, 4), (−1, 1)

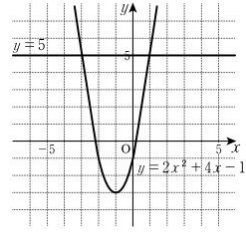


20

(1) (4, −2), (1, 4)

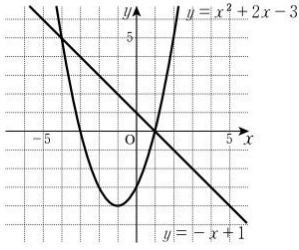


(2) (−3, 5), (1, 5)

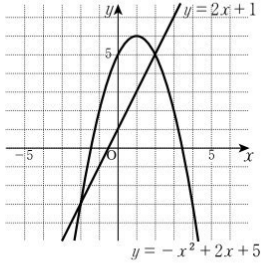


19

(2) (−4, 5), (1, 0)

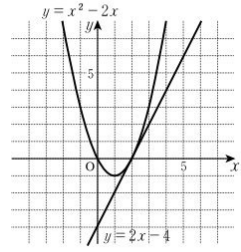


(3) (−2, −3), (2, 5)

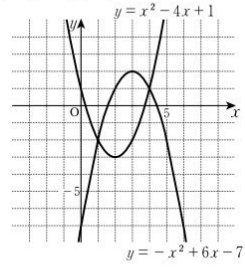


20

(3) (2, 0)



(4) (4, 1), (1, −2)



K 21−24

21

1.

(1) $\boxed{0}$

(0 , 3)

(2) $x=0$

(0 , −4)

22

1.

(1) $x=2$

(2, 0)

(2) $x=-3$

(−3, 0)

21

2.

(1) $x=0$

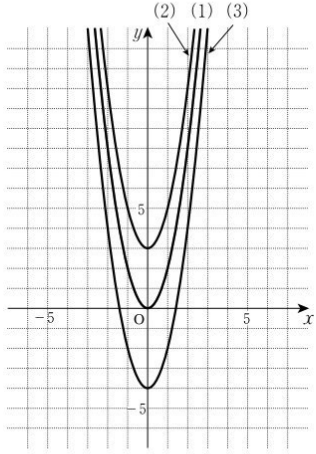
(0 , 0)

(2) $x=0$

(0 , 3)

(3) $x=0$

(0 , −4)



3.

(1) $\boxed{3}$

(2) $\boxed{-4}$

22

2.

(1) $x=0$

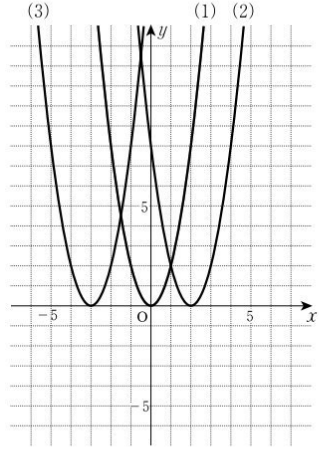
(0, 0)

(2) $x=2$

(2, 0)

(3) $x=-3$

(−3, 0)



3.

(1) $\boxed{2}$

(2) $\boxed{-3}$

23

1.

(1) $x=0$

(0, 3)

(2) $x=2$

(2, 0)

(3) $x=2$

(2, 3)

2.

(1) 3

(2) 2

24

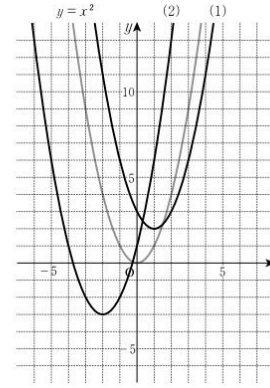
1.

(1) $x=1$

(1, 2)

(2) $x=-2$

(−2, −3)



2.

(1) 1 2

(2) −2 −3

23

3.

(1) $x=0$

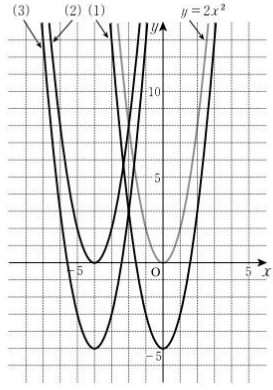
(0, −5)

(2) $x=-4$

(−4, 0)

(3) $x=-4$

(−4, −5)



4.

(1) −5

(2) −4

(3) −4 −5

24

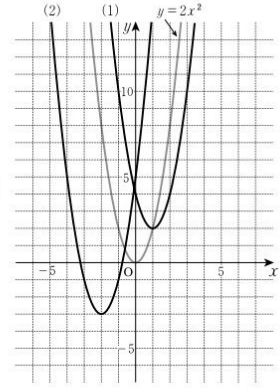
3.

(1) $x=1$

(1, 2)

(2) $x=-2$

(−2, −3)



4.

(1) 1 2

(2) −2 −3

K 25−28

25

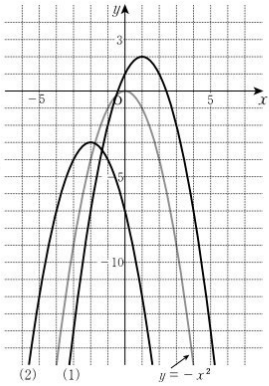
1.

(1) $x=1$

(1, 2)

(2) $x=-2$

$(-2, -3)$



2.

(1) 1 2

(2) −2 −3

26

(1) 1 3

1 3

(2) −1 unit along the x-axis and 3 units along the y-axis.

25

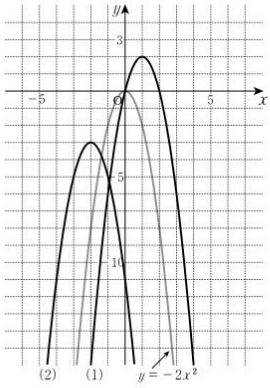
3.

(1) $x=1$

(1, 2)

(2) $x=-2$

$(-2, -3)$



4.

(1) 1 2

(2) −2 −3

26

(3) 2 units along the x-axis and 1 unit along the y-axis.

(4) 2 units along the x-axis and −1 unit along the y-axis.

(5) −2 units along the x-axis and −1 unit along the y-axis.

27

1.

(1) (0 , 2)

□2

(2) (1 , 0)

□1

(3) (1 , 2)

□1

□2

(4) (−1 , −2)

□−1

□−2

28

1.

(1) □6 □4

(2) $y=\frac{1}{2}(x-5)^2$

(3) $y=\frac{1}{2}x^2+2$

(4) $y=\frac{1}{2}(x-2)^2+3$

(5) $y=\frac{1}{2}(x+3)^2+3$

(6) $y=\frac{1}{2}(x+3)^2-5$

27

2.

(1) □2

(2) $y=3x^2-2$

(3) □1

(4) $y=3(x+1)^2$

(5) $y=3(x-1)^2+2$

(6) $y=3(x+1)^2-2$

28

2.

(1) $y=-3(x-6)^2+4$

(2) $y=-3(x-5)^2$

(3) $y=-3x^2+2$

(4) $y=-3(x-2)^2+3$

(5) $y=-3(x+3)^2+3$

(6) $y=-3(x+3)^2-5$

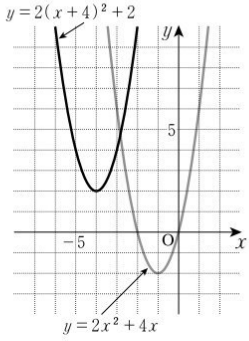
(7) $y=-3(x-a)^2+b$

K 29−32

29

1.

$y = 2(x+4)^2+2$



30

1.

$y = -2(x+2)^2+5$

〔 $y = -2x^2-8x-3$ 〕

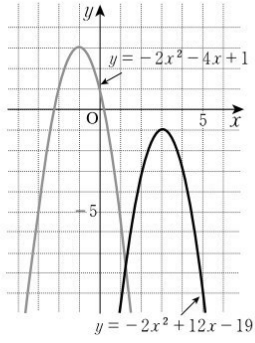
2.

4 units along the x-axis and
1 unit along the y-axis.

29

2.

4 units along the x-axis
and -4 units along the y-axis.



30

3.

(1) (A)　　(5) (F)

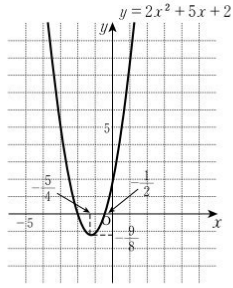
(2) (E)　　(6) (D)

(3) (G)　　(7) (B)

(4) (C)

31

(1)



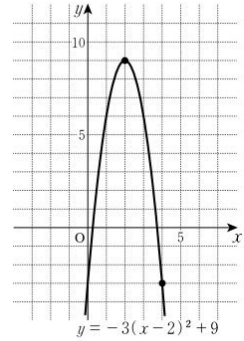
① $\left(-\frac{5}{4},\ -\frac{9}{8}\right)$

② (0, 2)

③ $\left(-\frac{1}{2},\ 0\right)$ and (−2, 0)

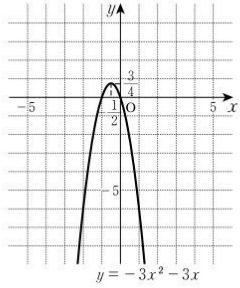
32

(1) $y=-3(x-2)^2+9$



31

(2)

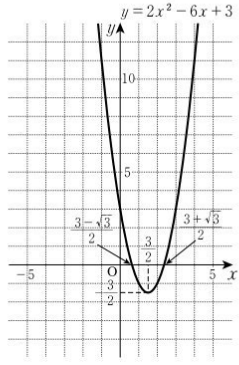


① $\left(-\frac{1}{2},\ \frac{3}{4}\right)$

② (0, 0)

③ (0, 0) and (−1, 0)

(3)



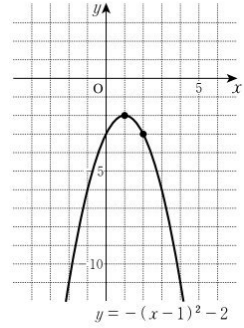
① $\left(\frac{3}{2},\ -\frac{3}{2}\right)$

② (0, 3)

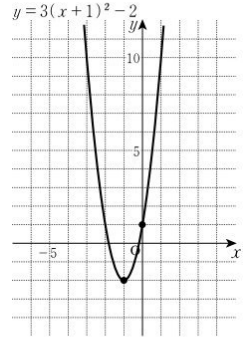
③ $\left(\frac{3+\sqrt{3}}{2},\ 0\right)$ and $\left(\frac{3-\sqrt{3}}{2},\ 0\right)$

32

(2) $y=-(x-1)^2-2$



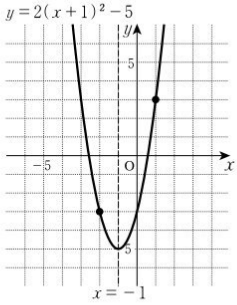
(3) $y=3(x+1)^2-2$



K 33−36

33

(1) $y=2(x+1)^2-5$

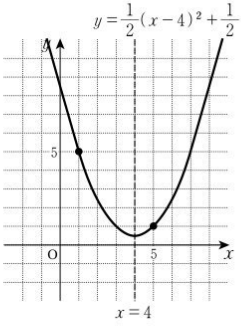


34

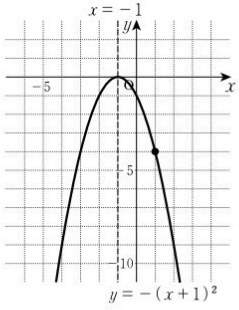
Ex.

33

(2) $y=\frac{1}{2}(x-4)^2+\frac{1}{2}$



(3)* $y=-(x+1)^2$

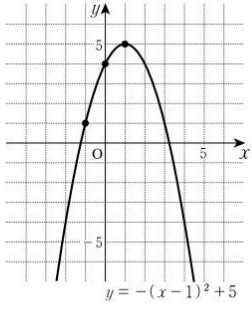


34

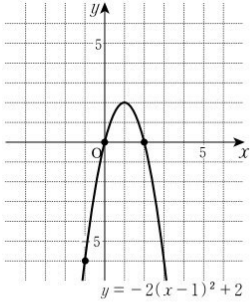
(1) ax^2+bx+c

(−1 , 1), (0 , 4) and (1 , 5)

$y=-x^2+2x+4$



(2) $y=-2x^2+4x$

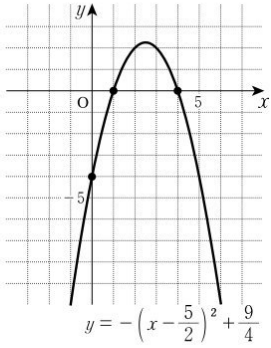


35

1.

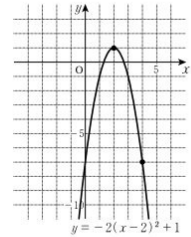
（1） $y=-(x-1)(x-4)$

〔 $y=-x^2+5x-4$ 〕

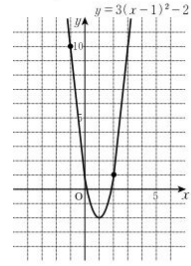


36

（1） $y=-2(x-2)^2+1$



（2） $y=3(x-1)^2-2$



35

2.

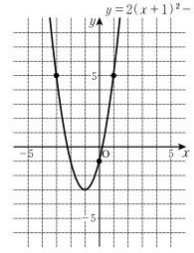
（1） $y=-2(x+1)(x-3)$

〔 $y=-2x^2+4x+6$ 〕

（2） $y=-2x^2+4x+6$

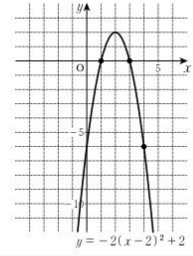
36

（3） $y=2x^2+4x-1$



（4） $y=-2(x-1)(x-3)$

〔 $y=-2x^2+8x-6$ 〕



K 37−40

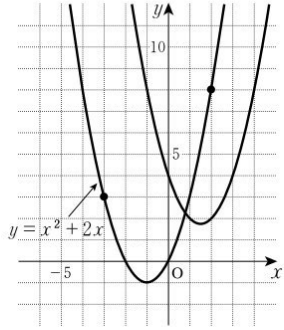
37	38
(1) $y=2(x-1)^2+3$	(1) $y=-\frac{1}{2}(x+2)^2$
(2) $y=-2(x+1)^2+11$	(2) $y=-(x+3)(x-1)$ 〔$y=-x^2-2x+3$〕

37	38
(3) $y=-2(x+2)(x-1)$ 〔$y=-2x^2-2x+4$〕	(3) $y=\frac{2}{3}(x-1)^2-\frac{8}{3}$
(4) $y=x^2+2x-5$	(4)* $y=2x(x-2)$ 〔$y=2x^2-4x$〕

39

1.

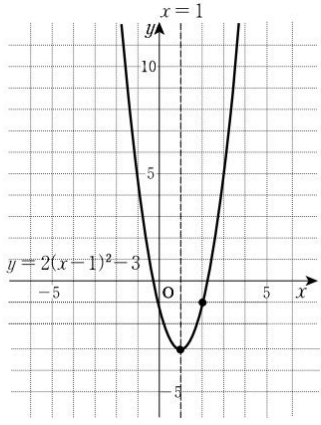
$y = x^2 + 2x$



39

2.

$y = 2(x-1)^2 - 3$



40

(1) (A)　　(5) (C)

(2) (I)　　(6) (G)

(3) (B)　　(7) (D), (F)

(4) (E), (H)　　(8) (J)

40

Let's try this!

(ii) 1 3

[Sol] Since the parabola passes through (0, −6),

$-6 = 3a$

$a = -2$

Therefore, $y = -2(x-1)(x-3)$

〔$y = -2x^2 + 8x - 6$〕

(iii) Since the parabola passes through (1, 0), (3, 0) and (0, −6),

$$\begin{cases} a+b+c=0 & \cdots ① \\ 9a+3b+c=0 & \cdots ② \\ c=-6 & \cdots ③ \end{cases}$$

Substituting ③ into ① and ②,

$a + b = 6$ …④

$9a + 3b = 6$ …⑤

From ⑤ − 3×④,

$a = -2$

Substituting into ④, $b = 8$

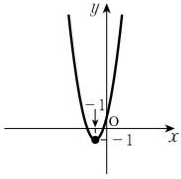
Therefore, $y = -2x^2 + 8x - 6$

K 41−44

41

1.

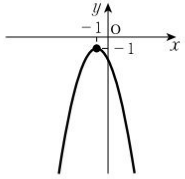
(1) $y=2(x+1)^2-1$



-1	-1

2.

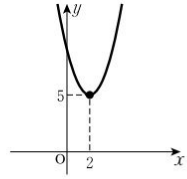
(1)



-1	-1

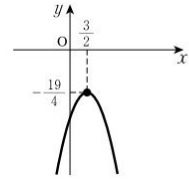
42

(1)



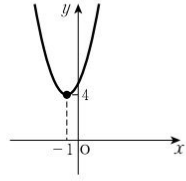
5, at $x=2$

(3)



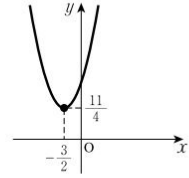
$-\frac{19}{4}$, at $x=\frac{3}{2}$

(2)



4, at $x=-1$

(4)

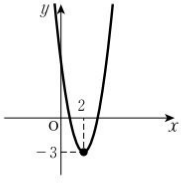


$\frac{11}{4}$, at $x=-\frac{3}{2}$

41

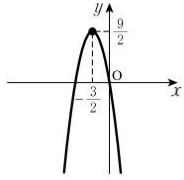
3.

(1)



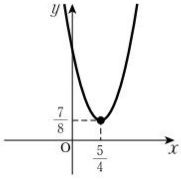
-3	2

(3)



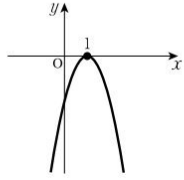
$\frac{9}{2}$, at $x=-\frac{3}{2}$

(2)



$\frac{7}{8}$, at $x=\frac{5}{4}$

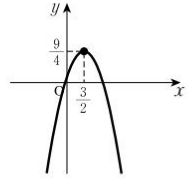
(4)



0, at $x=1$

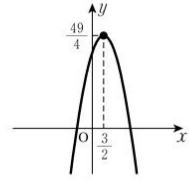
42

(5)



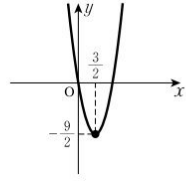
$\frac{9}{4}$, at $x=\frac{3}{2}$

(7)



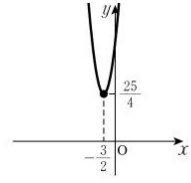
$\frac{49}{4}$, at $x=\frac{3}{2}$

(6)



$-\frac{9}{2}$, at $x=\frac{3}{2}$

(8)



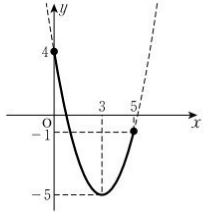
$\frac{25}{4}$, at $x=-\frac{3}{2}$

43

1.

(1) $(x-3)^2-5$

0 5

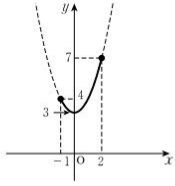


$-5 \leqslant y \leqslant 4$

43

2.

(1)

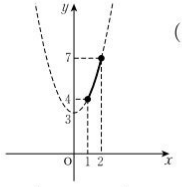


7 2

3 0

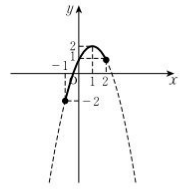
3 7

(2)



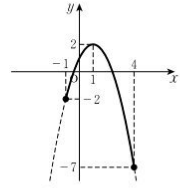
Maximum value:
7, at $x = 2$
Minimum value:
4, at $x = 1$
Range:
$4 \leqslant y \leqslant 7$

(3)



Maximum value:
2, at $x = 1$
Minimum value:
-2, at $x = -1$
Range:
$-2 \leqslant y \leqslant 2$

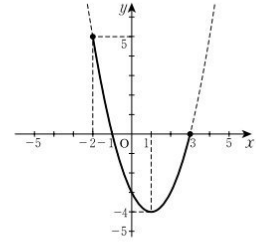
(4)



Maximum value:
2, at $x = 1$
Minimum value:
-7, at $x = 4$
Range:
$-7 \leqslant y \leqslant 2$

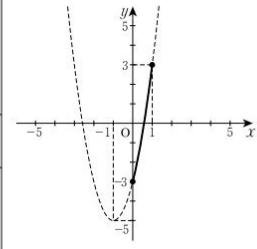
44

(1)



Maximum value:
5, at $x = -2$
Minimum value:
-4, at $x = 1$
Range:
$-4 \leqslant y \leqslant 5$

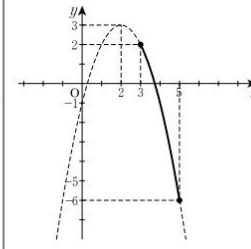
(2)



Maximum value:
3, at $x = 1$
Minimum value:
-3, at $x = 0$
Range:
$-3 \leqslant y \leqslant 3$

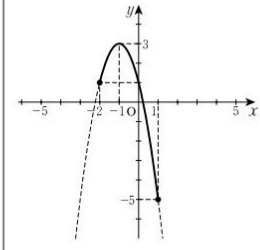
44

(3)



Maximum value:
2, at $x = 3$
Minimum value:
-6, at $x = 5$
Range:
$-6 \leqslant y \leqslant 2$

(4)

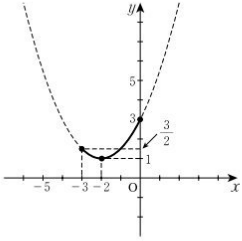


Maximum value:
3, at $x = -1$
Minimum value:
-5, at $x = 1$
Range:
$-5 \leqslant y \leqslant 3$

K 45−48

45

(1)

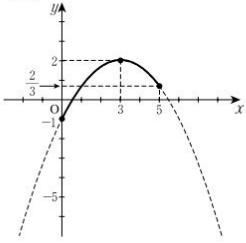


Maximum value:
3, at $x=0$

Minimum value:
1, at $x=-2$

Range:
$1 \leqslant y \leqslant 3$

(2)



Maximum value:
2, at $x=3$

Minimum value:
-1, at $x=0$

Range:
$-1 \leqslant y \leqslant 2$

46

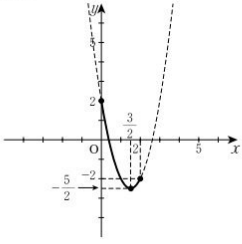
1.

(1) $y=-2(x+1)^2+3$

$\{y=-2x^2-4x+1\}$

45

(3)



Maximum value:
2, at $x=0$

Minimum value:
$-\frac{5}{2}$, at $x=\frac{3}{2}$

Range:
$-\frac{5}{2} \leqslant y \leqslant 2$

46

2.

$y=2(x-2)^2-4$

$\{y=2x^2-8x+4\}$

3.

$y=-\frac{3}{4}(x+1)^2+8$

$\left\{y=-\frac{3}{4}x^2-\frac{3}{2}x+\frac{29}{4}\right\}$

47	48
1. $b=-4,\ c=5$	1. $b=-8,\ c=5$ 2. $b=-12,\ c=-9$
47	**48**
2. $b=-4,\ c=5$	3. $a=-1,\ c=1$ 4. $a=2,\ b=4$

K 49–52

49

1.

$\begin{cases} a=-1 \\ b=2 \\ c=4 \end{cases}$ $\begin{cases} a=-3 \\ b=6 \\ c=10 \end{cases}$

50

1. Maximum value:
1, at $x=3$

Minimum value:
-5, at $x=6$

2.

$\begin{cases} b=4 \\ c=-1 \end{cases}$ $\begin{cases} b=-4 \\ c=-1 \end{cases}$

49

2.

$\begin{cases} a=-6 \\ b=6 \end{cases}$ $\begin{cases} a=2 \\ b=-2 \end{cases}$

50

Let's think about this!

51

1.

(1) $f(5)=3$

(2) $f(5)=3$

(3) $f(6)=4$

52

1.

(1) $\boxed{1}$

$f(a+4)=a^2-2a+4$

(2) $\boxed{1}$

$f(\ 5\ )=3$

(3) $\boxed{1}$ $\boxed{5}$

$\boxed{5}$

$f(\ 5\ )=3$

51

2.

(1) $f(\ 5\ )=3$

(2) $\boxed{5}$

$f(\ 5\ )=3$

(3) $f(\ a\ )=a^2-10a+28$

52

(4) $\boxed{5}$

$\boxed{5}$

$f(\ 5\ )=3$

(5) $\boxed{5}$

$\boxed{a}$

$f(\ a\ )=a^2-10a+28$

2.

(i) $\boxed{1}$

(ii) $\boxed{1}$ $\boxed{5}$

(iii) $\boxed{5}$

K 53−56

53

Ex.

54

1.

(i) When $a<1$, $f(a+1)=a^2-2a$

(ii) When $1\leqq a\leqq 2$, $f(2)=-1$

(iii) When $a>2$, $f(a)=a^2-4a+3$

53

1.

$x=5$

(i) 5

$a<3$

$f(\ \ a+2\ \ )=a^2-6a+12$

(ii) When $3\leqq a\leqq 5$, $f(5)=3$

(iii) When $a>5$, $f(a)=a^2-10a+28$

54

2.

(i) When $a<-2$, $f(a)=a^2+4a+3$

(ii) When $-2\leqq a\leqq -1$, $f(-2)=-1$

(iii) When $a>-1$, $f(a-1)=a^2+2a$

55

1.

(1) 1

$f(a)=a^2-10a+28$

(2) a

$f(\ a\ )=a^2-10a+28$

(3) 7

3 7

$f(\ 3\ )=f(\ 7\ )=7$

56

Ex.

55

(4) 3 5

$a+4$

$f(\ a+4\ )=a^2-2a+4$

(5) 5

$a+4$

$f(\ a+4\ )=a^2-2a+4$

2.

(i) 3

(ii) 3

(iii) 3

56

1.

$f(a)=a^2-10a+28$

$f(\ a+2\ )=a^2-6a+12$

$f(\ a+2\ )$

(i) 4

$f(\ a\ )=a^2-10a+28$

(ii) When $a=4$, $f(4)=f(6)=4$

(iii) When $a>4$, $f(a+2)=a^2-6a+12$

K 57−60

57

1.

(i) When $a < \frac{3}{2}$,

$f(a) = a^2 - 4a + 3$

(ii) When $a = \frac{3}{2}$,

$f\left(\frac{3}{2}\right) = f\left(\frac{5}{2}\right) = -\frac{3}{4}$

(iii) When $a > \frac{3}{2}$,

$f(a+1) = a^2 - 2a$

58

1.

$f(x) = -(x-5)^2 - 3$

$\boxed{x = 5}$

(i) When $a < 1$, $f(a+4) = -a^2 + 2a - 4$

(ii) When $1 \leqq a \leqq 5$, $f(5) = -3$

(iii) When $a > 5$, $f(a) = -a^2 + 10a - 28$

57

2.

(i) When $a < -\frac{3}{2}$,

$f(a-1) = a^2 + 2a$

(ii) When $a = -\frac{3}{2}$,

$f\left(-\frac{5}{2}\right) = f\left(-\frac{3}{2}\right) = -\frac{3}{4}$

(iii) When $a > -\frac{3}{2}$,

$f(a) = a^2 + 4a + 3$

58

2.

(i) When $a < 3$,

$f(a) = -a^2 + 10a - 28$

(ii) When $a = 3$,

$f(3) = f(7) = -7$

(iii) When $a > 3$,

$f(a+4) = -a^2 + 2a - 4$

59

1.

5

3 | 7

(i) 5 | 1

(ii) 1 | 3

5

(iii) 3

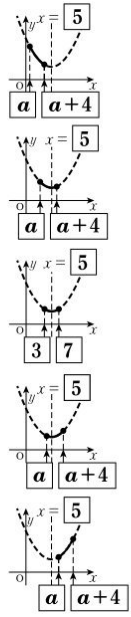
3 | 7

5

(iv) 3 | 5

5

(v) 5



60

1.

(i) When $a < -1$,
maximum value: $f(a) = a^2 - 2a + 4$
minimum value: $f(a+2) = a^2 + 2a + 4$

(ii) When $-1 \leqq a < 0$,
maximum value: $f(a) = a^2 - 2a + 4$
minimum value: $f(1) = 3$

(iii) When $a = 0$,
maximum value: $f(0) = f(2) = 4$
minimum value: $f(1) = 3$

(iv) When $0 < a \leqq 1$,
maximum value: $f(a+2) = a^2 + 2a + 4$
minimum value: $f(1) = 3$

(v) When $a > 1$,
maximum value: $f(a+2) = a^2 + 2a + 4$
minimum value: $f(a) = a^2 - 2a + 4$

59

2.

3

(i) $a+2<3$ | $a<1$

maximum value: $f(a+2) = -a^2 + 2a - 2$
minimum value: $f(a) = -a^2 + 6a - 10$

(ii) When $1 \leqq a < 2$,
maximum value: $f(3) = -1$
minimum value: $f(a) = -a^2 + 6a - 10$

(iii) When $a = 2$,
maximum value: $f(3) = -1$
minimum value: $f(2) = f(4) = -2$

(iv) When $2 < a \leqq 3$,
maximum value: $f(3) = -1$
minimum value: $f(a+2) = -a^2 + 2a - 2$

(v) When $a > 3$,
maximum value: $f(a) = -a^2 + 6a - 10$
minimum value: $f(a+2) = -a^2 + 2a - 2$

60

Let's try this!

K 61−64

61

1.

(1) $\boxed{0}$

$\boxed{0}$

$f(\ 0\ ) = a^2 + 3$

(2) $\boxed{0}$

$\boxed{0}$

$f(\ 0\ ) = 3$

(3) $\boxed{0}$ $\boxed{4}$

$\boxed{a}$

$f(\ a\ ) = 3$

62

Ex.

61

(4) $\boxed{4}$

$\boxed{4}$

$f(\ 4\ ) = 3$

(5) $\boxed{4}$

$\boxed{4}$

$f(\ 4\ ) = a^2 - 8a + 19$

2.

(i) $\boxed{0}$

(ii) $\boxed{0}$ $\boxed{4}$

(iii) $\boxed{4}$

62

1.

$\boxed{x = a}$

(i) $\boxed{0}$

$f(\ 0\ ) = a^2 + 1$

(ii) When $0 \leqslant a \leqslant 2$, $f(a) = 1$

(iii) When $a > 2$, $f(2) = a^2 - 4a + 5$

63

1.

(i) $f(\ \ 0\ \ ) = \dfrac{a^2}{4} + 3$

(ii) When $0 \leqq a \leqq 8$, $f\left(\dfrac{a}{2}\right) = 3$

(iii) When $a > 8$, $f(4) = \dfrac{a^2}{4} - 4a + 19$

64

1.

$\boxed{(x-a)^2 - a^2}$

$\boxed{a}$

(i) When $a < 0$, $f(0) = 0$

(ii) When $0 \leqq a \leqq 4$, $f(a) = -a^2$

(iii) When $a > 4$, $f(4) = -8a + 16$

63

2.

(i) $\boxed{0}$

$f(0) = a^2 + 3$

(ii) When $-4 \leqq a \leqq 0$, $f(-a) = 3$

(iii) When $a < -4$, $f(4) = a^2 + 8a + 19$

64

2.

(i) When $a < 0$, $f(0) = 2$

(ii) When $0 \leqq a \leqq 1$, $f(a) = -a^2 + 2$

(iii) When $a > 1$, $f(1) = -2a + 3$

65

Ex.

66

1.

$f(\ 0\ ) = \dfrac{a^2}{4} + 3$

$f(\ 4\ ) = \dfrac{a^2}{4} - 4a + 19$

(i) When $a < 4$, $f(4) = \dfrac{a^2}{4} - 4a + 19$

(ii) When $a = 4$, $f(0) = f(4) = 7$

(iii) When $a > 4$, $f(0) = \dfrac{a^2}{4} + 3$

65

1.

$f(\ 2\ ) = a^2 - 4a + 7$

$f(0) = f(\ 2\ )$

$a^2 + 3 = a^2 - 4a + 7$

$a = 1$

(i) $\boxed{1}$

$f(\ 2\ ) = a^2 - 4a + 7$

(ii) When $a = 1$, $f(0) = f(2) = 4$

(iii) When $a > 1$, $f(0) = a^2 + 3$

66

2.

(i) $\boxed{-2}$

$f(0) = a^2 + 3$

(ii) When $a = -2$, $f(0) = f(4) = 7$

(iii) When $a > -2$, $f(4) = a^2 + 8a + 19$

67

1.

(i) When $a<2$, $f(4)=-8a+16$

(ii) When $a=2$, $f(0)=f(4)=0$

(iii) When $a>2$, $f(0)=0$

68

1.

(i) When $a<0$, $f(0)=-2$

(ii) When $0\leqq a\leqq 1$, $f(a)=a^2-2$

(iii) When $a>1$, $f(1)=2a-3$

67

2.

(i) When $a<\frac{1}{2}$, $f(1)=-2a+3$

(ii) When $a=\frac{1}{2}$, $f(0)=f(1)=2$

(iii) When $a>\frac{1}{2}$, $f(0)=2$

68

2.

(i) When $a<\frac{1}{2}$, $f(1)=2a-3$

(ii) When $a=\frac{1}{2}$, $f(0)=f(1)=-2$

(iii) When $a>\frac{1}{2}$, $f(0)=-2$

69

1.

a

2

(i) 0

(ii) 0 2

a

(iii) 2

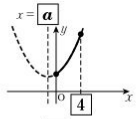
0 4

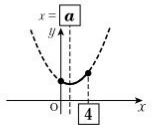
a [2]

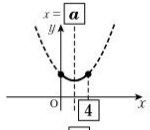
(iv) 2 4

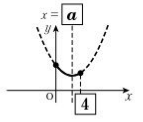
a

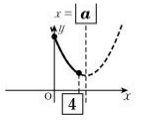
(v) 4











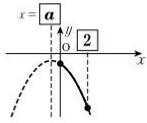
69

2.

(i) $a<0$

$f(\ 0\ ) = -a^2-1$

$f(\ 2\ ) = -a^2+4a-5$



(ii) When $0 \leqq a < 1$,
the maximum value is $f(a) = -1$
the minimum value is $f(2) = -a^2+4a-5$

(iii) When $a = 1$,
the maximum value is $f(a)(f(1)) = -1$
the minimum value is $f(0) = f(2) = -2$

(iv) When $1 < a \leqq 2$,
the maximum value is $f(a) = -1$
the minimum value is $f(0) = -a^2-1$

(v) When $a > 2$,
the maximum value is $f(2) = -a^2+4a-5$
the minimum value is $f(0) = -a^2-1$

70

1.

(i) When $a<0$,
the maximum value is $f(1) = a^2-2a+3$
the minimum value is $f(0) = a^2+2$

(ii) When $0 \leqq a < \frac{1}{2}$,
the maximum value is
$f(1) = a^2-2a+3$
the minimum value is $f(a) = 2$

(iii) When $a = \frac{1}{2}$,
the maximum value is $f(0) = f(1) = \frac{9}{4}$
the minimum value is $f(a)\left[f\left(\frac{1}{2}\right)\right] = 2$

(iv) When $\frac{1}{2} < a \leqq 1$,
the maximum value is $f(0) = a^2+2$
the minimum value is $f(a) = 2$

(v) When $a > 1$,
the maximum value is $f(0) = a^2+2$
the minimum value is $f(1) = a^2-2a+3$

70

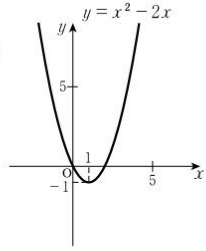
Consider this!

71

(1)

① (1 , −1)

② (0 , 0)

③ 

④ 2

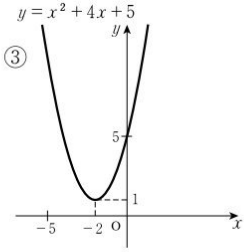
⑤ $D = 4 > 0$

72

(1)

① (−2 , 1)

② (0 , 5)

③ 

④ 0

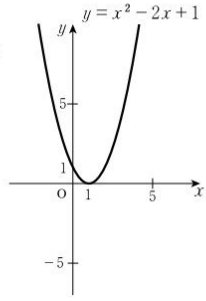
⑤ $D = -4 < 0$

71

(2)

① (1 , 0)

② (0 , 1)

③ 

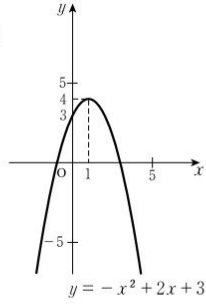
④ 1

⑤ $D = 0$

(3)

① (1 , 4)

② (0 , 3)

③ 

④ 2

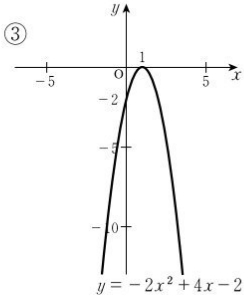
⑤ $D = 16 > 0$

72

(2)

① (1 , 0)

② (0 , −2)

③ 

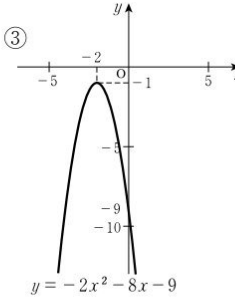
④ 1

⑤ $D = 0$

(3)

① (−2 , −1)

② (0 , −9)

③ 

④ 0

⑤ $D = -8 < 0$

73

1.

(1) $\boxed{2}$

(2) $\boxed{2}$

(3) $\boxed{1}$

(4) $\boxed{0}$

(5) $\boxed{1}$

(6) $\boxed{2}$

(7) $\boxed{0}$

74

1. When $k<\frac{9}{4}$,
there are 2 common points.

When $k=\frac{9}{4}$,
there is 1 common point.

When $k>\frac{9}{4}$,
there are 0 common points.

73

2.

(1) $D=1-8k>0$

$k<\frac{1}{8}$

(2) $k=\frac{1}{8}$

(3) $k>\frac{1}{8}$

74

2. When $k>-\frac{9}{2}$,
there are 2 common points.

When $k=-\frac{9}{2}$,
there is 1 common point.

When $k<-\frac{9}{2}$,
there are 0 common points.

3. When $k<\frac{7}{2}$,
there are 2 common points.

When $k=\frac{7}{2}$,
there is 1 common point.

When $k>\frac{7}{2}$,
there are 0 common points.

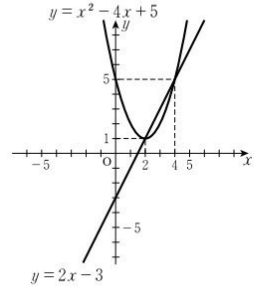
75

1.

(1) (A)　　(2) (F)　　(3) (B)　　(4) (E)　　(5) (D)

76

(1) (4, 5), (2, 1)



75

2.

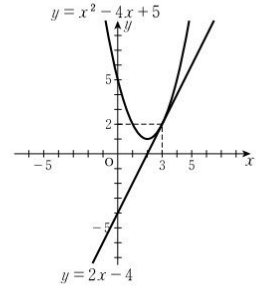
(1) ＋ ＋ ＋ −

(2) − − 0 ＋

(3) − ＋ − 0

76

(2) (3, 2)

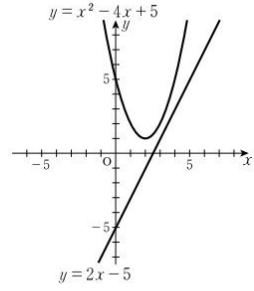


(3) $2x-5$

$x^2-6x+10$

$(-3)^2-10$　　-1

Ans.　No common points



K 77−80

77

Ex.

78

1.

When $k<\frac{7}{2}$,
there are 2 common points.

When $k=\frac{7}{2}$,
there is 1 common point.

When $k>\frac{7}{2}$,
there are 0 common points.

77

1.

$y=x^2-6x+4$

$y=-3x+k$

$x^2-3x-k+4=0$

$D=4k-7$

$D>0$	$k>\frac{7}{4}$	2
$D=0$	$k=\frac{7}{4}$	1
$D<0$	$k<\frac{7}{4}$	0

78

2.

When $k>-4$,
there are 2 common points.

When $k=-4$,
there is 1 common point.

When $k<-4$,
there are 0 common points.

3.

When $k<4$,
there are 2 common points.

When $k=4$,
there is 1 common point.

When $k>4$,
there are 0 common points.

79

1.

(1) $k<4$

(2) $k>3$

80

1.

(1) $k>\frac{1}{4}$

(2) $k<\frac{9}{4}$

(3) $k=2$

79

2.

$k=4$

(2, 2)

80

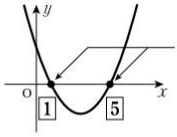
2.*

The graphs have no common points.

K 81−84

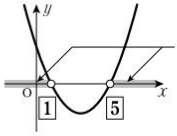
81

1.

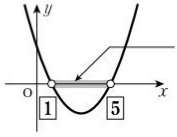
(1) 

$(x-5)(x-1)=0$

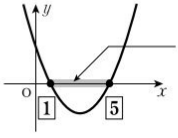
5　1

(2) 

1　5

(3) 

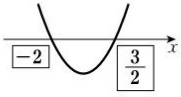
1　5

(4) 

1　5

81

2.

(1) 

-2　$\frac{3}{2}$

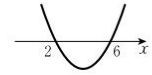
(2) $-2<x<\frac{3}{2}$

(3) $x\leqq -2,\ x\geqq \frac{3}{2}$

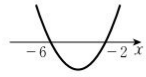
(4) $-2\leqq x\leqq \frac{3}{2}$

82

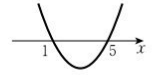
1.

(1) 

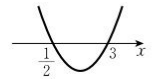
$x<2,\ x>6$

(2) 

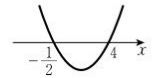
$-6<x<-2$

(3) 

$x\leqq 1,\ x\geqq 5$

(4) 

$x<\frac{1}{2},\ x>3$

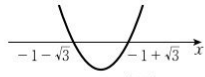
(5) 

$-\frac{1}{2}\leqq x\leqq 4$

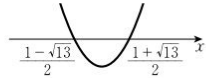
82

2.

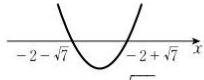
(1) $x=-1\pm\sqrt{3}$



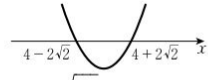
$x<-1-\sqrt{3},\ x>-1+\sqrt{3}$

(2) 

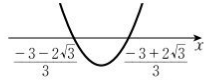
$\frac{1-\sqrt{13}}{2}\leqq x\leqq \frac{1+\sqrt{13}}{2}$

(3) 

$x<-2-\sqrt{7},\ x>-2+\sqrt{7}$

(4) 

$4-2\sqrt{2}<x<4+2\sqrt{2}$

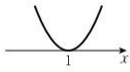
(5) 

$x<\frac{-3-2\sqrt{3}}{3},\ x>\frac{-3+2\sqrt{3}}{3}$

83

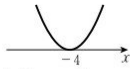
1.

(1) $(x-1)^2>0$



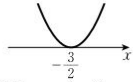
1 1

(2)



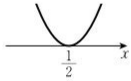
All real numbers

(3)



No solution

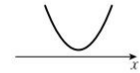
(4)



$x=\frac{1}{2}$

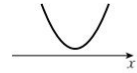
84

(1) $D=-7<0$



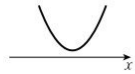
All real numbers

(2)



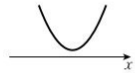
All real numbers

(3)



No solution

(4)

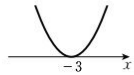


No solution

83

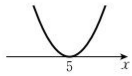
2.

(1)



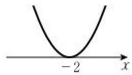
All real numbers

(2)



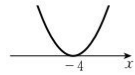
No solution

(3)



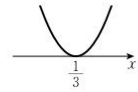
$x=-2$

(4)



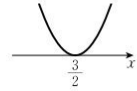
$x<-4$, $x>-4$
$(x\neq-4)$

(5)



No solution

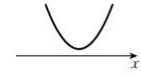
(6)



All real numbers

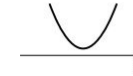
84

(5)



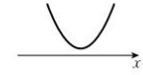
All real numbers

(6)



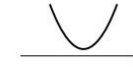
No solution

(7)



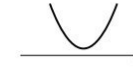
No solution

(8)



All real numbers

(9)



All real numbers

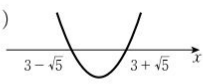
(10)

No solution

K 85−88

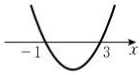
85

(3)



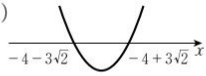
$3-\sqrt{5}<x<3+\sqrt{5}$

(1)



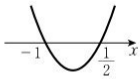
$-1<x<3$

(4)



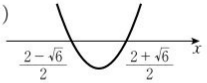
$x \leqslant -4-3\sqrt{2}$,
$x \geqslant -4+3\sqrt{2}$

(2)



$x<-1, x>\frac{1}{2}$

(5)

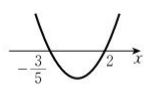


$\frac{2-\sqrt{6}}{2} \leqslant x \leqslant \frac{2+\sqrt{6}}{2}$

86

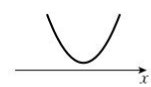
1.

(1)



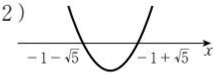
$-\frac{3}{5}<x<2$

(4)



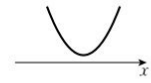
All real numbers

(2)



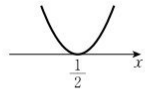
$x \leqslant -1-\sqrt{5}$,
$x \geqslant -1+\sqrt{5}$

(5)



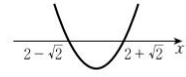
No solution

(3)



$x=\frac{1}{2}$

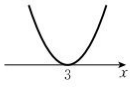
(6)



$2-\sqrt{2} \leqslant x \leqslant 2+\sqrt{2}$

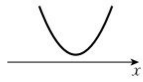
85

(6)



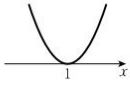
All real numbers

(9)



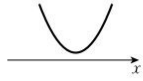
All real numbers

(7)



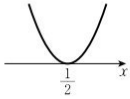
No solution

(10)



No solution

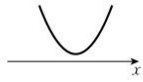
(8)



$x<\frac{1}{2}, x>\frac{1}{2}$

$\left[x \neq \frac{1}{2}\right]$

(11)



All real numbers

86

2.

$c>25$

87

1.

(1) $b=1,\ c=-6$

(2) $b=5,\ c=6$

88

1.

(1) $-3<k<5$

(2) $k<-\dfrac{1}{3},\ k>1$

87

2.

(1) $a=1,\ b=1$

(2)* $-a(\ x-2\ )(\ x-3\ )<0$

$a=-2,\ b=10$

88

2.

$0<a\leqq 3$

3.

(1) $-1<m<2$

(2) $m<-1,\ m>2$

K 89−92

89

(1) $\frac{3}{2} \leqq x < 4$

(2) $-4 < x < -3,\ 2 < x < 3$

(3) $-3 < x \leqq -2,\ -\frac{1}{2} \leqq x < 1$

90

1.

(1) $\frac{1}{2} \leqq x \leqq 2$

(2) $x < 3-\sqrt{2},\ x > 3+\sqrt{2}$

(3) No solution

(4) $x < 2,\ x > 2$
$(x \neq 2)$

(5) All real numbers

(6) All real numbers

89

(4) $-7 < x \leqq 3,\ 4 \leqq x < 7$

(5) $-\frac{5}{2} < x \leqq \frac{9}{2}$

(6) $-4 < x \leqq -2,\ x \geqslant \frac{5}{2}$

(7) No solution

90

2.

$k < -3,\ k > 1$

3.

$-3 < k < 1$

91

(1) ① $\boxed{>}$ ② $\boxed{>}$ ③ $\boxed{=}$
⑤ $\boxed{>}$

(2) ① $D>0$ ② $-\dfrac{b}{2a}>0$ ③ $f(0)<0$
④ $\alpha<0$ ⑤ $\beta>0$

(3) ① $D>0$ ② $-\dfrac{b}{2a}=0$ ③ $f(0)<0$
④ $\alpha<0$ ⑤ $\beta>0$

92

(1) $2<k<3$

91

(4) ① $D>0$ ② $-\dfrac{b}{2a}<0$ ③ $f(0)<0$
④ $\alpha<0$ ⑤ $\beta>0$

(5) ① $D>0$ ② $-\dfrac{b}{2a}<0$ ③ $f(0)=0$
④ $\alpha<0$ ⑤ $\beta=0$

(6) ① $D>0$ ② $-\dfrac{b}{2a}<0$ ③ $f(0)>0$
④ $\alpha<0$ ⑤ $\beta<0$

92

(2) $2<k<3$

(3) $-4<k<-3$

K 93−96

93

1.

(1) $-5<k<-4$

94

1.

(1) ① $\boxed{>}$ ② $\boxed{>}$

③ $\boxed{>}$ ④ $\boxed{>}$

(2) ① $-\dfrac{b}{2a}>0$ ② $f(0)<0$

③ $\alpha<0$ ④ $\beta>0$

(3) ① $-\dfrac{b}{2a}<0$ ② $f(0)<0$

③ $\alpha<0$ ④ $\beta>0$

(4) ① $-\dfrac{b}{2a}<0$ ② $f(0)>0$

③ $\alpha<0$ ④ $\beta<0$

93

2.

(1) $-\dfrac{9}{8}<k<-1$

(2) $k>2$

94

2.

(1) $-1<k<2$

(2) $0<k<1$

95	96
1. (1) $k>2$ (2) $-2<k<-1$ (3) $k<-2$	1. (1) $3<k<7$
95	**96**
2. $\frac{2}{3}<k<1$, $k>2$	2. $4<k<6$ 3. $-3<k<-2$, $k>6$

K 97−100

97

1.
(1) $k<-2$

98

1.
(1) $\boxed{>}$ $\boxed{<}$

(2) $f(h)<0$, $f(k)<0$

(3) $f(h)<0$, $f(k)>0$

(4) $f(h)>0$, $f(k)>0$

2.
$\boxed{(3)}$

97

2.
(1) $k<-2$

(2) $6<k<7$

98

3.
(1) $-6<k<-\frac{1}{2}$

(2) $-\frac{1}{6}<k<\frac{2}{5}$

99

1.
(1) $-2<k<\frac{1}{2}$

(2) $\frac{1}{4}<k<\frac{2}{3}$

(3) $\frac{1}{4}<k<\frac{1}{2}$

100

1.
$-6<k<-2$

2.
$0<k<\frac{3}{4}$

99

2.
$0<k<\frac{3}{4}$

3.
$-\frac{1}{6}<k<\frac{3}{5}$

100

3.
$-1<k<\frac{3}{2}$

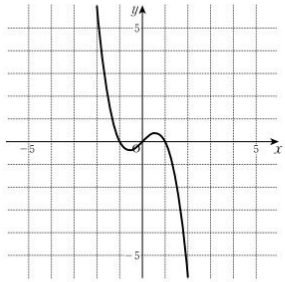
K 101−104

101

1.

(1)

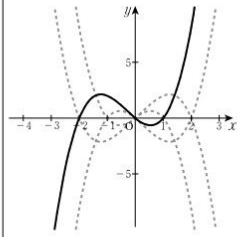
x	y
-2	**6**
-1	**0**
$-\frac{1}{2}$	$-\frac{3}{8}$
0	**0**
$\frac{1}{2}$	$\frac{3}{8}$
1	**0**
2	**−6**



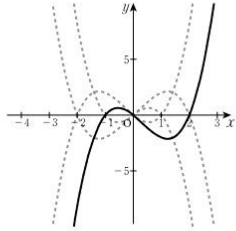
102

1.

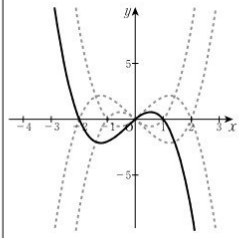
(1)



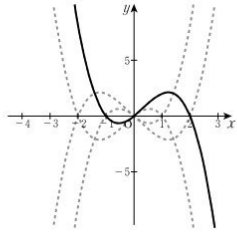
(3)



(2)



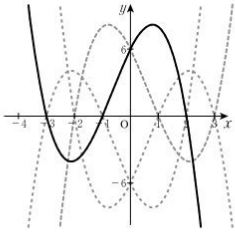
(4)



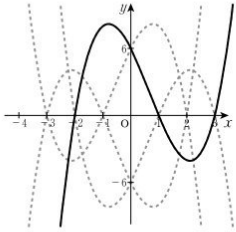
101

2.

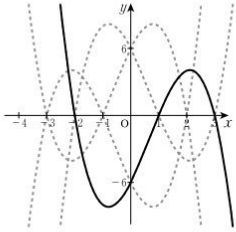
(2)



(1)



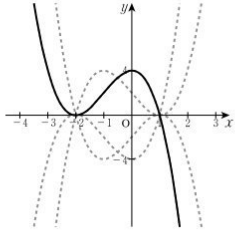
(3)



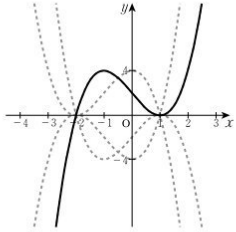
102

2.

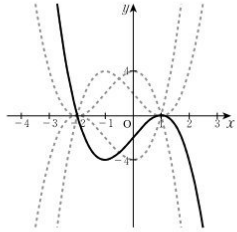
(2)



(1)



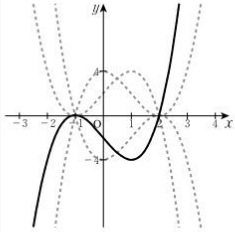
(3)



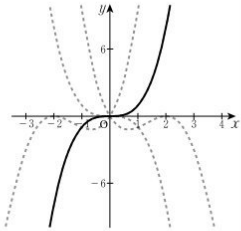
103

1.

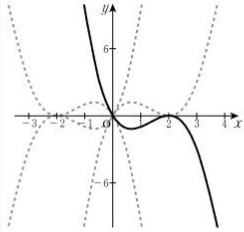
(1)



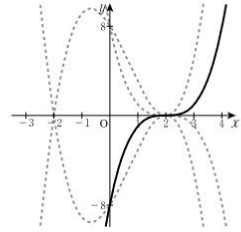
(3)



(2)



(4)



104

1.

(1) (E)

(2) (B)

(3) (D)

(4) (F)

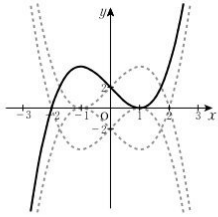
(5) (A)

(6) (C)

103

2.

(1)



104

2.

(1) (E) (2) (D)

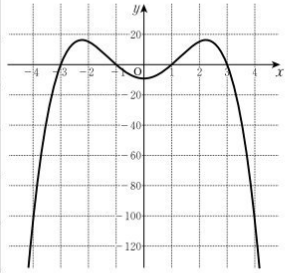
K 105−108

105

1.

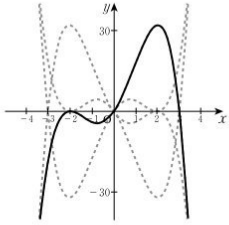
(1)

x	y
-4	$\mathbf{-105}$
-3	$\mathbf{0}$
-2	$\mathbf{15}$
-1	$\mathbf{0}$
0	$\mathbf{-9}$
1	$\mathbf{0}$
2	$\mathbf{15}$
3	$\mathbf{0}$
4	$\mathbf{-105}$

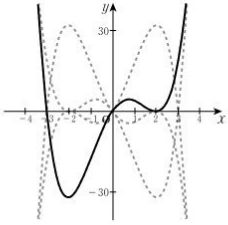


106

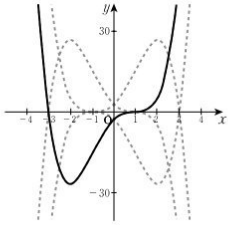
(2)



(1)



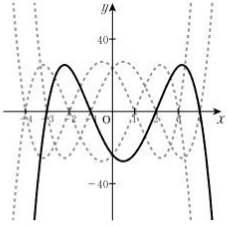
(3)*



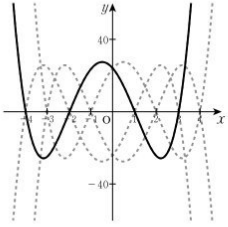
105

2.

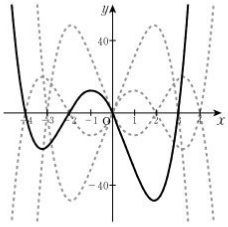
(2)



(1)

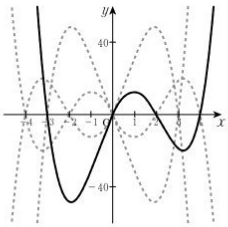


(3)

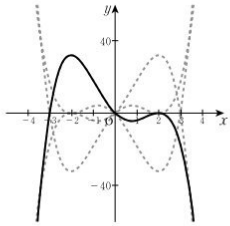


106

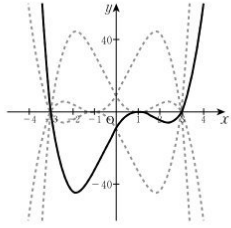
(4)



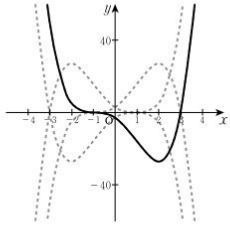
(6)



(5)



(7)



107

1.

(1) (B)

(2) (F)

(3) (D)

(4) (A)

(5) (E)

(6) (C)

107

2.

(1) (B)

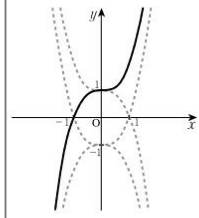
(2) (C)

(3) (D)

108

1.

(1)



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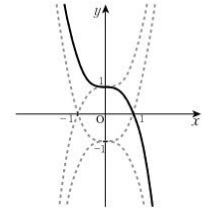
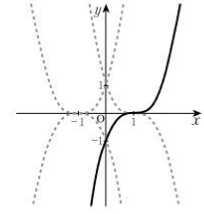


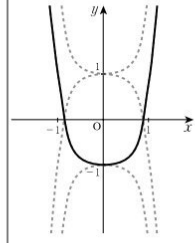
(3)



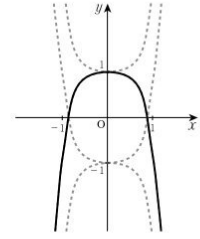
108

2.

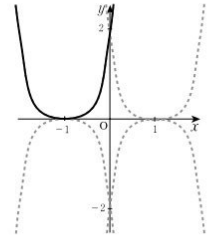
(1)



(2)



(3)



3.

(1) -1 y

(2) -1 x

K 109−112

109

1.

(1) 1 y

(2) -2 units along the y-axis

(3) 1 unit along the x-axis

(4) -2 units along the x-axis

2.

(1) 3 units along the y-axis

(2) -1 unit along the y-axis

(3) 3 units along the x-axis

(4) -1 unit along the x-axis

110

1.

(1) (E)

(2) (A)

(3) (C)

(4) (B)

(5) (D)

(6) (F)

109

3.

(1) 2

(2) $y=-x^3+2$

(3) $y=-x^3-1$

4.

(1) $y=3(x-1)^4$

(2) $y=3(x+3)^4$

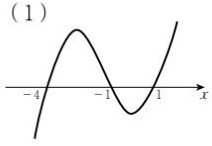
(3) $y=3x^4+1$

(4) $y=3x^4-3$

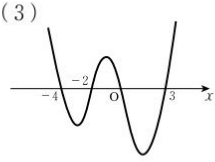
110

2.

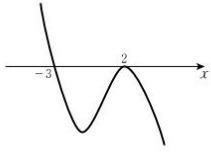
(1)



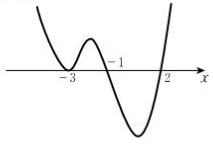
(3)



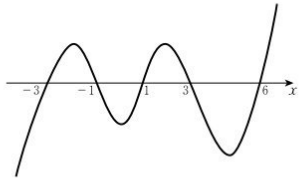
(2)



(4)

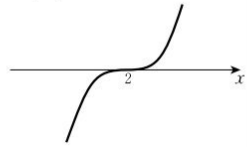


3.



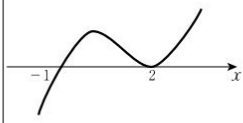
111

(2)



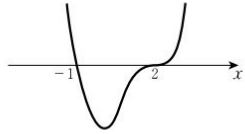
$x=2$

(1)



$x=-1,2$

(3)

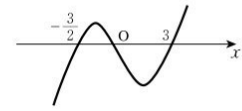


$x=-1,2$

112

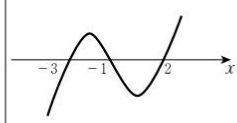
1.

(2)



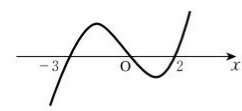
$-\frac{3}{2}<x<0, x>3$

(1)



$x<-3, -1<x<2$

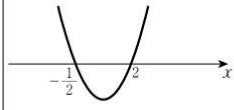
(3)



$x<-3, 0<x<2$

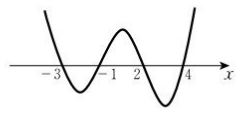
111

(4)



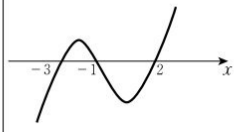
$x=-\frac{1}{2}, 2$

(6)



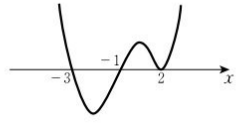
$x=-3, -1, 2, 4$

(5)



$x=-3,-1,2$

(7)

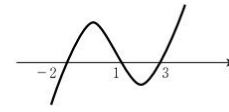


$x=-3,-1,2$

112

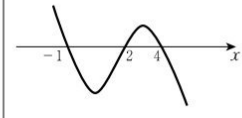
2.

(2)



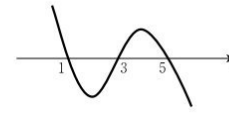
$x<-2, 1<x<3$

(1)



$-1\leqslant x\leqslant 2, x\geqslant 4$

(3)



$x\leqslant 1, 3\leqslant x\leqslant 5$

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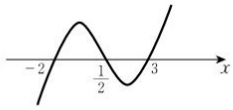
113

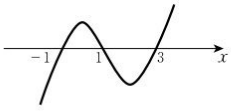
1.

(2)



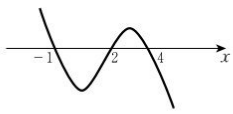
$x<-2,\ \frac{1}{2}<x<3$

(1)



$-1<x<1,\ x>3$

(3)

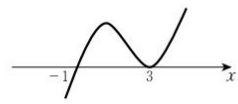


$x\leqslant -1,\ 2\leqslant x\leqslant 4$

114

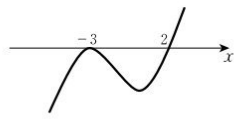
1.

(2)



$\boxed{-1}$

(1)



$x<-3,\ -3<x<2$

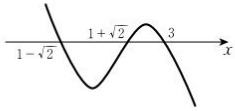
(3)

$x<-2$

113

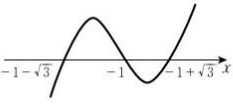
2.

(2)



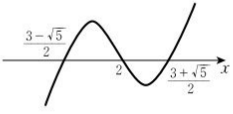
$x<1-\sqrt{2},\ 1+\sqrt{2}<x<3$

(1)



$x\leqslant -1-\sqrt{3},\ -1\leqslant x\leqslant -1+\sqrt{3}$

(3)

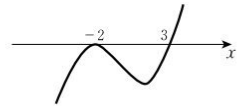


$\frac{3-\sqrt{5}}{2}\leqslant x\leqslant 2,\ x\geqslant \frac{3+\sqrt{5}}{2}$

114

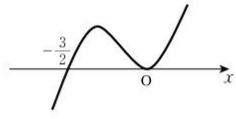
2.

(2)



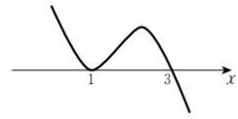
$\boxed{3}$

(1)



$x\leqslant -\frac{3}{2},\ x=0$

(3)

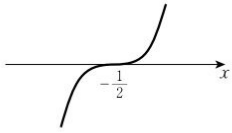


$x\leqslant 3$

115

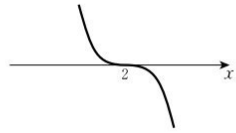
1.

(1)



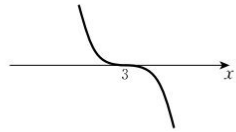
$x>-\frac{1}{2}$

(2)



$x>2$

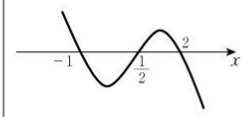
(3)



$x\leqslant 3$

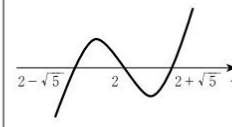
116

(1)



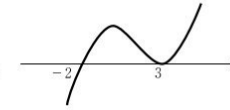
$-1\leqslant x\leqslant\frac{1}{2}, x\geqslant 2$

(2)



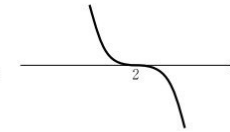
$2-\sqrt{5}\leqslant x\leqslant 2,$
$x\geqslant 2+\sqrt{5}$

(3)



$-2<x<3, x>3$

(4)



$x<2$

115

2.

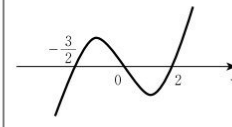
(1) $x\leqslant-\frac{1}{2}$

(2) $x\leqslant\frac{1}{2}$

(3) $x\geqslant 1$

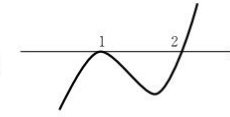
116

(5)



$x<-\frac{3}{2}, 0<x<2$

(6)



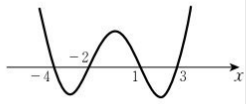
$x\leqslant 2$

K 117−120

117

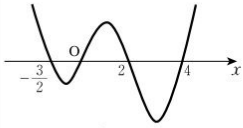
1.

(2)



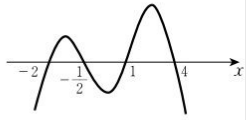
$-4 \leqslant x \leqslant -2$,
$1 \leqslant x \leqslant 3$

(1)



$-\frac{3}{2} < x < 0$,
$2 < x < 4$

(3)

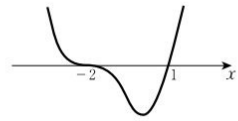


$x \leqslant -2$,
$-\frac{1}{2} \leqslant x \leqslant 1, x \geqslant 4$

118

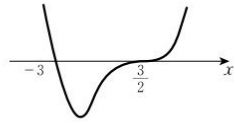
1.

(2)



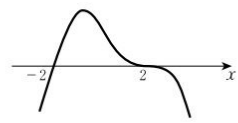
$x \leqslant -2, x \geqslant 1$

(1)



$-3 < x < \frac{3}{2}$

(3)

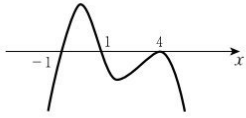


$-2 \leqslant x \leqslant 2$

117

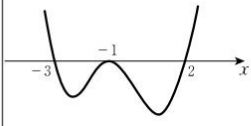
2.

(2)



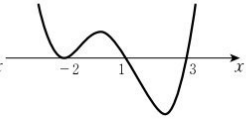
$-1 \leqslant x \leqslant 1, x = 4$

(1)



$-3 < x < -1$,
$-1 < x < 2$

(3)



$x \leqslant 1, x \geqslant 3$

118

2.

(2) $-2 < x < 3$

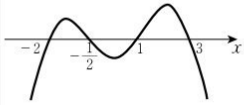
(1) $x \leqslant -2$,
$x \geqslant -\frac{3}{2}$

(3) $x \leqslant 0, x \geqslant \frac{2}{3}$

119

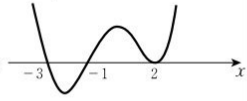
1.

(1)



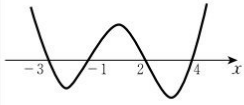
$x<-2$,
$-\frac{1}{2}<x<1, x>3$

(3)



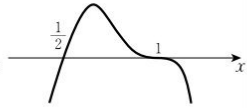
$x<-3$,
$-1<x<2, x>2$

(2)



$x<-3$,
$-1<x<2, x>4$

(4)



$x\leqq\frac{1}{2}, x\geqq 1$

120

(1) $x<-\frac{5}{2}$,
$-1<x<2$

(3) $-1<x<2$,
$2<x<4$

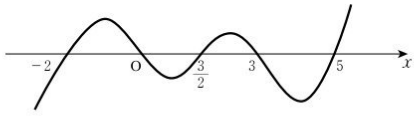
(2) $x\leqq -3$, $x=2$

(4) $x\leqq 3$, $x\geqq 5$

119

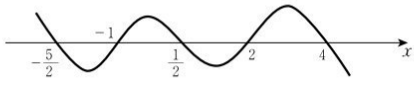
2.

(1)



$x<-2$, $0<x<\frac{3}{2}$, $3<x<5$

(2)



$x\leqq-\frac{5}{2}$, $-1\leqq x\leqq\frac{1}{2}$, $2\leqq x\leqq 4$

120

(5) $x<1, 1<x<3, x>3$
〔$x\neq 1, x\neq 3$〕

(6) $x\leqq -3, -1\leqq x\leqq\frac{1}{2}, 2\leqq x\leqq 4$

(7) $-3\leqq x\leqq 2$

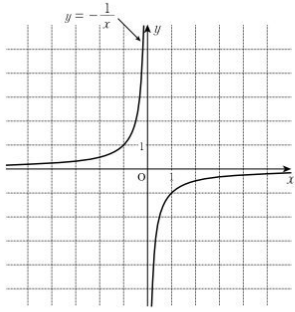
K 121−124

121

1.

(1)

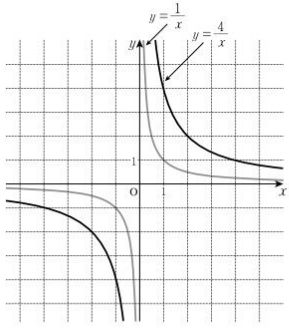
x	y
-3	$\frac{1}{3}$
-2	$\frac{1}{2}$
-1	1
$-\frac{1}{2}$	2
$-\frac{1}{3}$	3
0	
$\frac{1}{3}$	-3
$\frac{1}{2}$	-2
1	-1
2	$-\frac{1}{2}$
3	$-\frac{1}{3}$



121

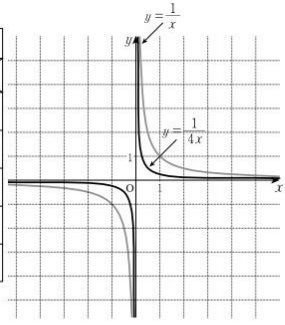
(2)

x	y
-5	$-\frac{4}{5}$
-4	-1
-3	$-\frac{4}{3}$
-2	-2
-1	-4
0	
1	4
2	2
3	$\frac{4}{3}$
4	1
5	$\frac{4}{5}$



(3)

x	y
0	
$\frac{1}{4}$	1
$\frac{1}{2}$	$\frac{1}{2}$
1	$\frac{1}{4}$
2	$\frac{1}{8}$
3	$\frac{1}{12}$



122

1.

$\frac{1}{10}$	1
$\frac{1}{100}$	10
$\frac{1}{1000}$	100

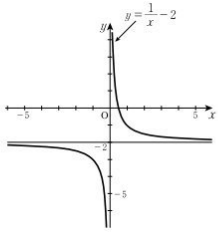
122

2.

$-\frac{1}{10}$	-1
$-\frac{1}{100}$	-10
$-\frac{1}{1000}$	-100

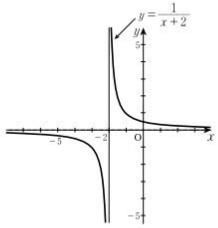
123

(1)



0

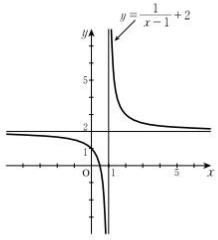
(2)



0

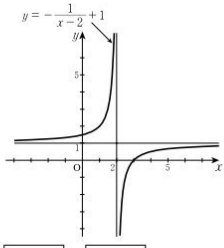
123

(3)



1 2

(4)



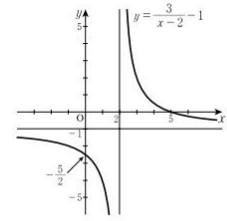
2 1

124

(1) $x=2,\ y=-1$

x-axis: $(5,0)$

y-axis: $\left(0,-\frac{5}{2}\right)$

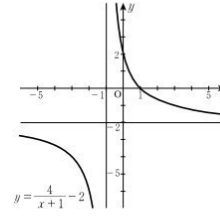


124

(2) $x=-1,\ y=-2$

x-axis: $(1,0)$

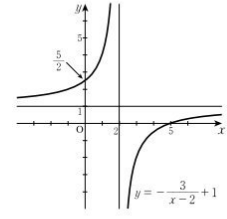
y-axis: $(0,2)$



(3) $x=2,\ y=1$

x-axis: $(5,0)$

y-axis: $\left(0,\frac{5}{2}\right)$

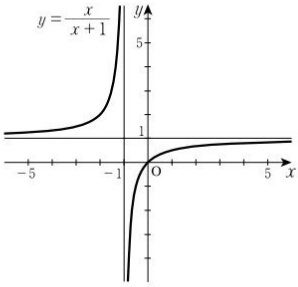


K 125−128

125

(1) $x=-1$, $y=1$

$(0,0)$

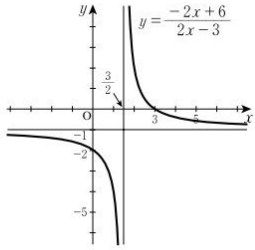


126

(1) $x=\frac{3}{2}$, $y=-1$

x-axis: $(3,0)$

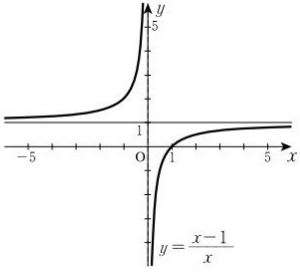
y-axis: $(0,-2)$



125

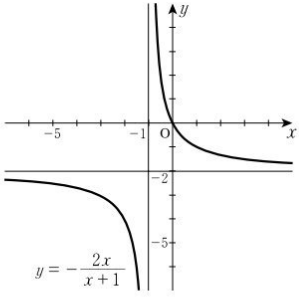
(2) $x=0$, $y=1$

x-axis: $(1,0)$



(3) $x=-1$, $y=-2$

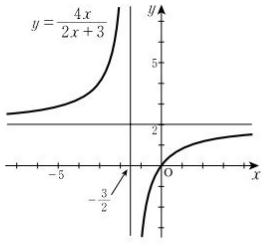
$(0,0)$



126

(2) $x=-\frac{3}{2}$, $y=2$

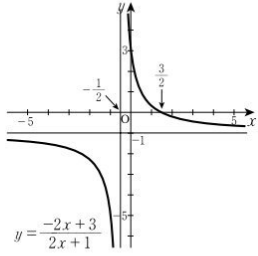
$(0,0)$



(3) $x=-\frac{1}{2}$, $y=-1$

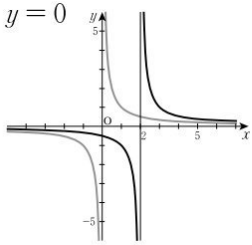
x-axis: $\left(\frac{3}{2},0\right)$

y-axis: $(0,3)$



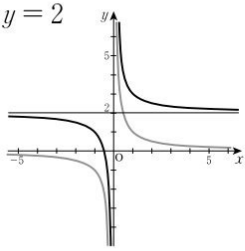
127

(1) $x=2$, $y=0$



2

(2) $x=0$, $y=2$

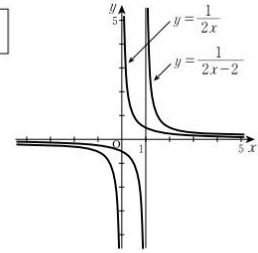


2

128

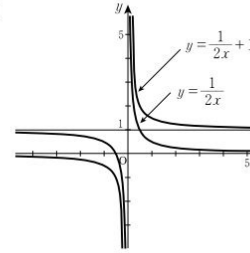
(1) 1

1 0



1

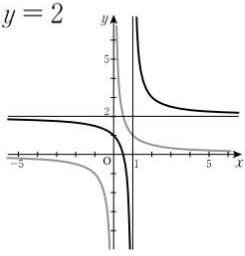
(2) $x=0$, $y=1$



1

127

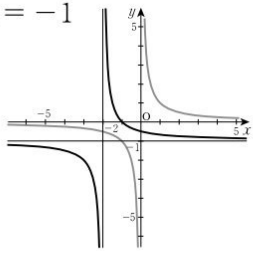
(3) $x=1$, $y=2$



1

2

(4) $x=-2$, $y=-1$



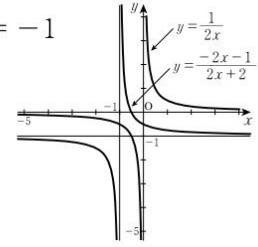
−2

−1

128

(3) 1 1

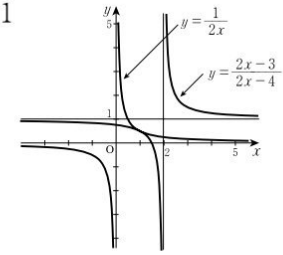
$x=-1$, $y=-1$



−1

−1

(4) $x=2$, $y=1$



2

1

K 129−132

129

1.

(1) [1]

(2) 3 units along the y-axis

(3) -3 units along the x-axis,
and -1 unit along the y-axis

2.

(1) [1]

1 unit along the x-axis

(2) -2 units along the y-axis

(3) [2]

-2 units along the x-axis,
and 1 unit along the y-axis

129

3.

(1) $y=\dfrac{1}{x}+3$

(2) $y=\dfrac{1}{x+1}$

(3) $y=\dfrac{1}{x-2}-1$

(4) $y=\dfrac{1}{x+3}+2$

4.

(1) $y=-\dfrac{2}{x}-1$

(2) $y=-\dfrac{2}{x-3}$

(3) $y=-\dfrac{2}{x-1}-3$

(4) $y=-\dfrac{2}{x+2}+1$

130

1.

(1) [(C)]

(2) [(F)]

(3) [(A)]

(4) [(E)]

(5) [(B)]

(6) [(D)]

130

2.

(1) [(A)], [(C)]

(2) [(B)], [(E)]

(3) [(D)], [(F)]

(A)

(B) [1] [1]

(C) $2+\dfrac{1}{x+1}$

(D)

(E) $1-\dfrac{1}{x}$

(F) $1+\dfrac{1}{2(x+2)}$

131

(1) $\frac{3}{4}$ 0

$\frac{3}{4}$ -2

0 1

0 $\frac{3}{4}$

(2) $\frac{2}{3}$

$\frac{2}{3}$ -1

$\frac{2}{3}$

131

(3) $\frac{1}{2}$ 2

does not exist

$\frac{1}{2}$ 2

(4) $\frac{4}{3}$

does not exist

$\frac{4}{3}$ 5

$\frac{4}{3}$

(5) 2 $\frac{5}{4}$

2 3

$\frac{5}{4}$ 6

$\frac{5}{4}$ 2

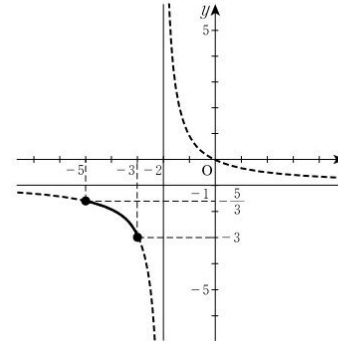
132

Ex.

132

(1) $x=-2, y=-1$

$(0, 0)$

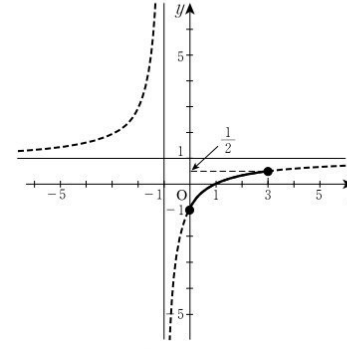


$-3 \leqq f(x) \leqq -\frac{5}{3}$

(2) $x=-1, y=1$

x-axis: $(1, 0)$

y-axis: $(0, -1)$



$-1 \leqq f(x) \leqq \frac{1}{2}$

133

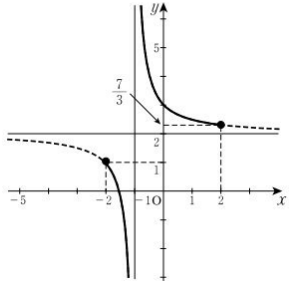
Ex.

133

(1) $x=-1$, $y=2$

x-axis: $\left(-\frac{3}{2}, 0\right)$

y-axis: $(0, 3)$

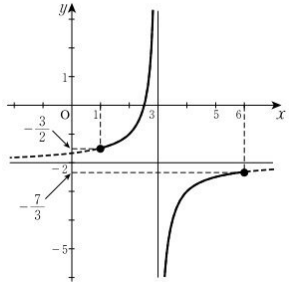


$f(x)\leqq 1$, $f(x)\geqq \frac{7}{3}$

(2) $x=3$, $y=-2$

x-axis: $\left(\frac{5}{2}, 0\right)$

y-axis: $\left(0, -\frac{5}{3}\right)$



$f(x)\leqq -\frac{7}{3}$, $f(x)\geqq -\frac{3}{2}$

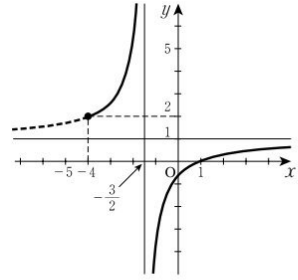
134

1.

(1) $x=-\frac{3}{2}$, $y=1$

x-axis: $(1, 0)$

y-axis: $\left(0, -\frac{2}{3}\right)$



$f(x)<1$, $f(x)\geqq 2$

134

2.

(1) $\frac{7}{3}\leqq f(x)\leqq 3$

(2) $f(x)\leqq \frac{5}{3}$, $f(x)\geqq 3$

(3) $2<f(x)\leqq 3$

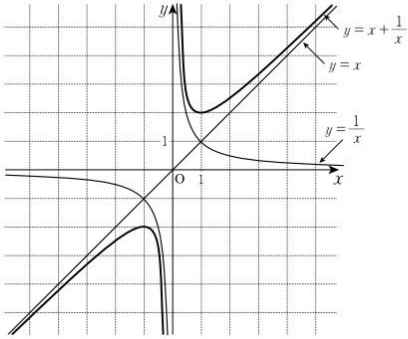
(4) $f(x)\leqq \frac{5}{3}$, $f(x)>2$

135

1.

(1)

x	…	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4
$\frac{1}{x}$	…	**4**	**2**	**1**	$\frac{1}{2}$	$\frac{1}{4}$
y	…	$\frac{17}{4}$	$\frac{5}{2}$	**2**	$\frac{5}{2}$	$\frac{17}{4}$

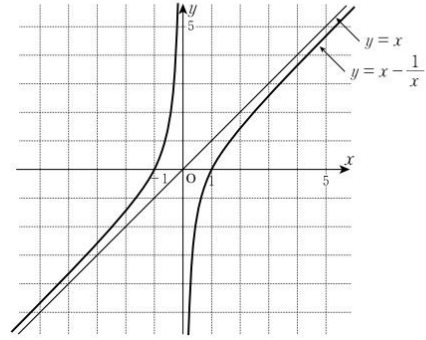


136

1.

(1)

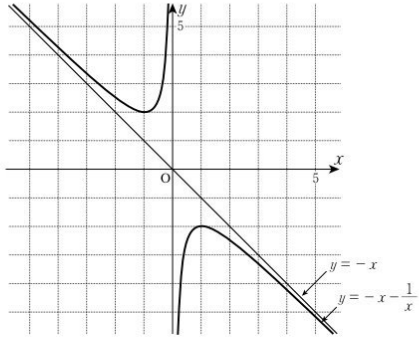
x	…	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4
y	…	$-\frac{15}{4}$	$-\frac{3}{2}$	**0**	$\frac{3}{2}$	$\frac{15}{4}$



135

(2)

x	…	$-\frac{1}{2}$	$-\frac{1}{4}$	0	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4
y	…	$\frac{5}{2}$	$\frac{17}{4}$		$-\frac{17}{4}$	$-\frac{5}{2}$	-2	$-\frac{5}{2}$	$-\frac{17}{4}$



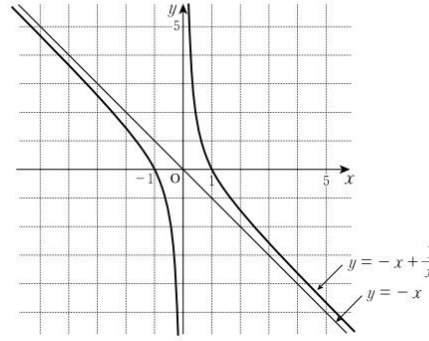
2.

0 　 $-x$

136

(2)

x	…	$-\frac{1}{2}$	$-\frac{1}{4}$	0	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4
y	…	$-\frac{3}{2}$	$-\frac{15}{4}$		$\frac{15}{4}$	$\frac{3}{2}$	**0**	$-\frac{3}{2}$	$-\frac{15}{4}$



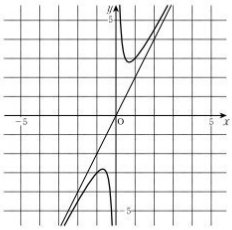
2.

0 　 $-x$

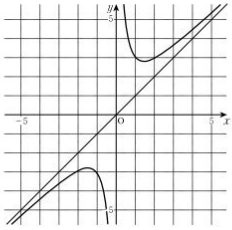
K 137−140

137

(1) 0 $2x$



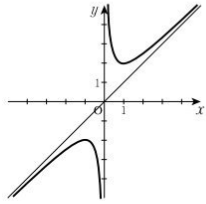
(2) $x=0$, $y=x$



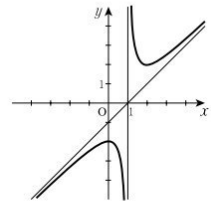
138

1.

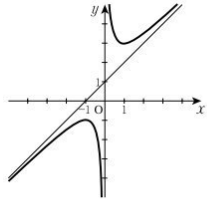
(1) 0 x



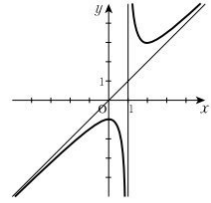
(3) $x=1$, $y=x-1$



(2) $x=0$, $y=x+1$



(4) $x=1$, $y=x$



2.

1

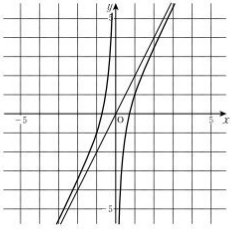
1

1

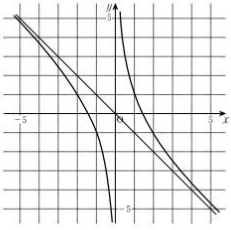
1

137

(3) $x=0$, $y=2x$



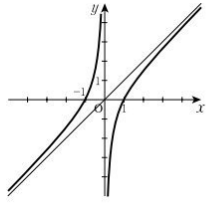
(4) $x=0$, $y=-x$



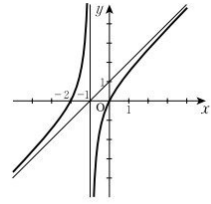
138

3.

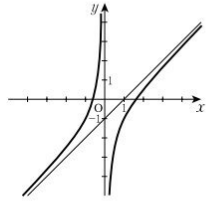
(1) $x=0$, $y=x$



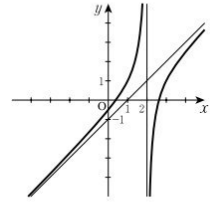
(3) $x=-1$, $y=x+1$



(2) $x=0$, $y=x-1$



(4) $x=2$, $y=x-1$



4.

-1

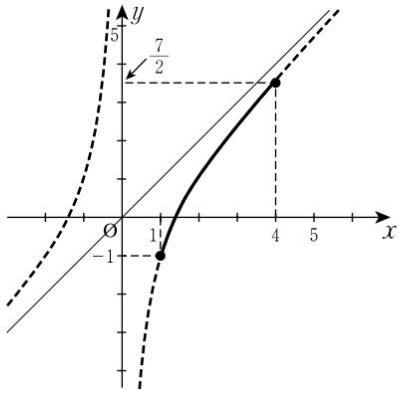
-1

2

1

139

1.



$f(1) = -1$

140

1.

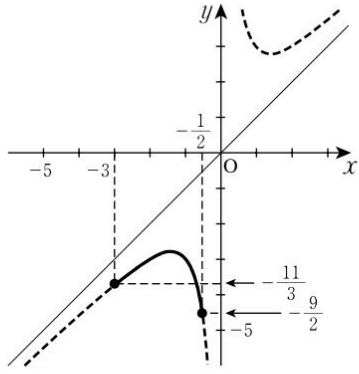
(1) (C)　　(4) (D)

(2) (F)　　(5) (A)

(3) (B)　　(6) (E)

139

2.



$f\left(-\frac{1}{2}\right) = -\frac{9}{2}$

140

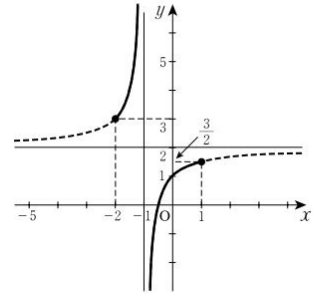
2.

$x = -1$, $y = 2$

x-axis: $\left(-\frac{1}{2}, 0\right)$

y-axis: $(0, 1)$

$f(x) \leqslant \frac{3}{2}$, $f(x) \geqslant 3$



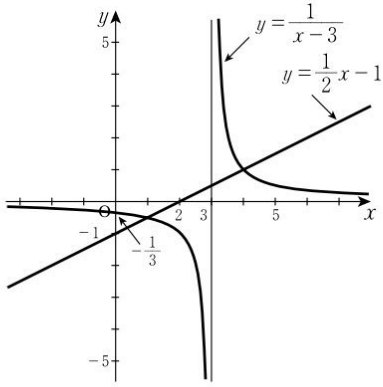
K 141−144

141

Ex.

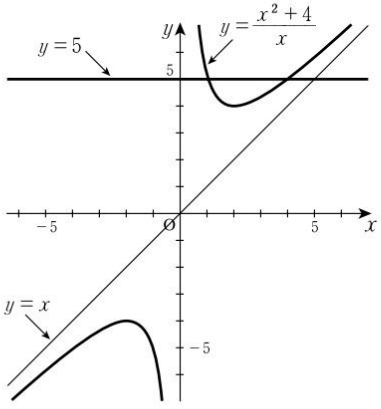
141

(1)



$(4, 1)$, $\left(1, -\frac{1}{2}\right)$

(2)

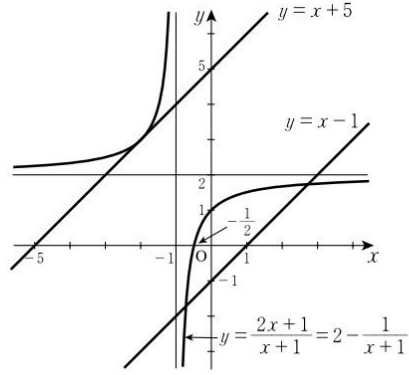


$(4, 5)$, $(1, 5)$

142

1.

(1)

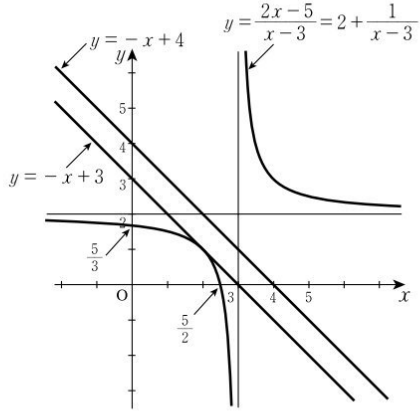


(2) ① $(1+\sqrt{3}, \sqrt{3})$, $(1-\sqrt{3}, -\sqrt{3})$　② $(-2, 3)$

142

2.

(1)



(2) ① $(2, 1)$

② does not exist

143

Ex.

144

1.
(1) $x=5, -2$

(2) $x=4, -1$

143

(1) When $k<-3$, $k>1$,
the number of common points is 2.

When $k=-3$, 1,
the number of common points is 1.

When $-3<k<1$,
the number of common points is 0.

144

2.
(1) $x=-4$

K 145−148

145

(1) $x=-\dfrac{1}{2}$

(2) $x=\dfrac{1}{2}$, 3

145

(3) $x=-2$

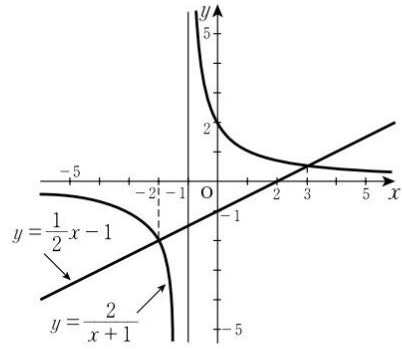
(4) $x=0$

146

Ex.

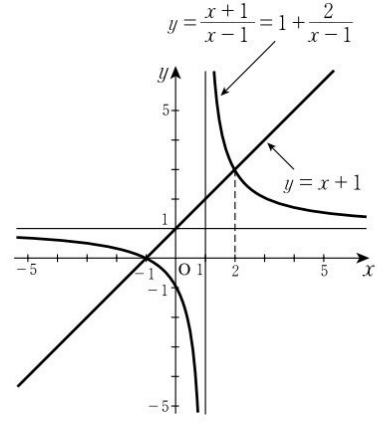
146

(1)



$-2<x<-1$, $x>3$

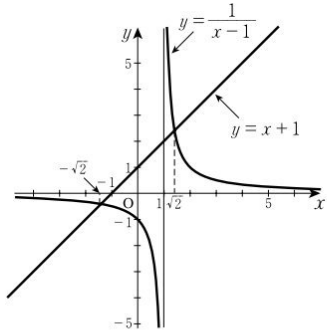
(2)



$x\leqq -1$, $1<x\leqq 2$

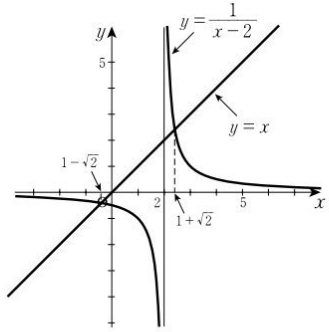
147

(1)



$x \leqq -\sqrt{2},\ 1 < x \leqq \sqrt{2}$

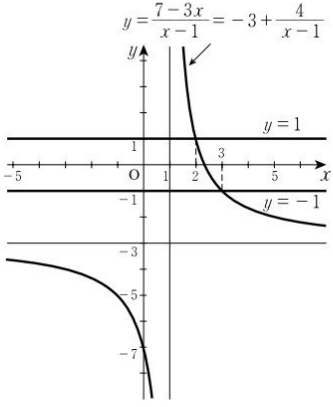
(2)



$1-\sqrt{2} < x < 2,\ x > 1+\sqrt{2}$

147

(3)

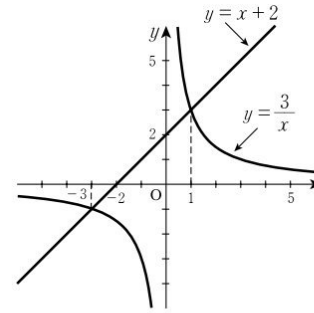


$2 \leqq x < 3$

148

1.

(1)

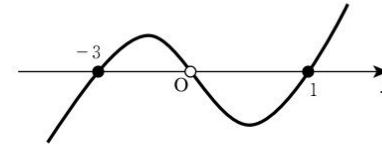


$-3 \leqq x < 0,\ x \geqq 1$

148

2.

(1)



$-3 \leqq x < 0,\ x \geqq 1$

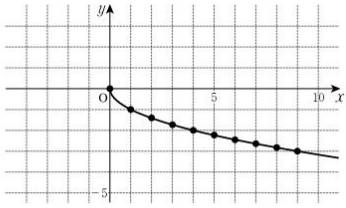
K 149−152

149	150
(1) $x \leqq -4,\ -1 < x < 2$	1. $k = 3 \pm 2\sqrt{3}$ 2. $x = -2$
149	**150**
(2) $-2 < x \leqq 0,\ x > 4$ (3) $x < -1,\ 3 \leqq x < 5$	3. $x \leqq -1,\ 1 < x \leqq 2$

151

(1)

x	…	0	1	…	4	…	9
y	…	**0**	**−1**	…	**−2**	…	**−3**

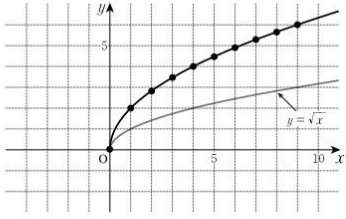


0

151

(2)

x	…	1	…	4	…	9
y	…	**2**	…	**4**	…	**6**

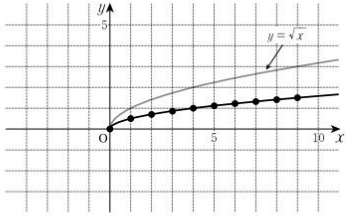


0

0

(3)

x	…	0	1	…	4	…	9
y	…	**0**	$\frac{1}{2}$	…	**1**	…	$\frac{3}{2}$



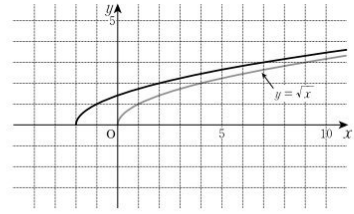
0

0

152

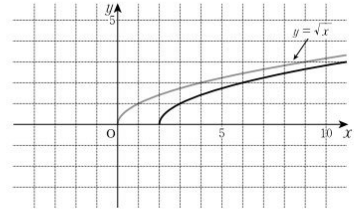
(1)

x	…	−2	−1	0	1	2	3	4	5	6	7
y	…	**0**	**1**	$\sqrt{2}$	$\sqrt{3}$	**2**	$\sqrt{5}$	$\sqrt{6}$	$\sqrt{7}$	$2\sqrt{2}$	**3**



0

(2)

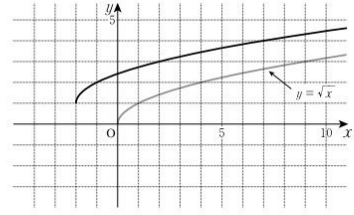


$x \geqq 2$

$y \geqq 0$

152

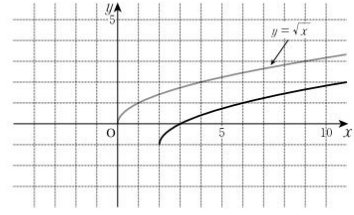
(3)



$x \geqq -2$

$y \geqq 1$

(4)



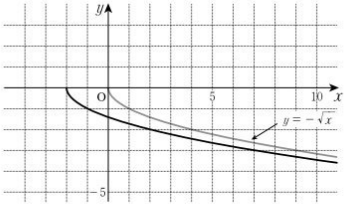
$x \geqq 2$

$y \geqq -1$

K 153−156

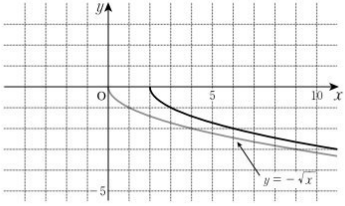
153

(1)



-2

(2)

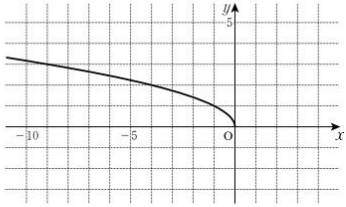


$x \geqq 2$

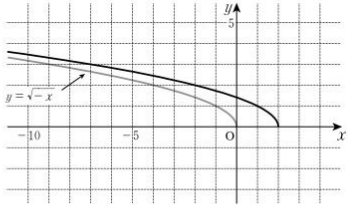
$y \leqq 0$

154

(1)



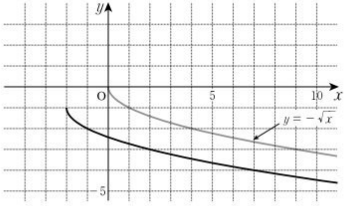
(2)



$y \geqq 0$

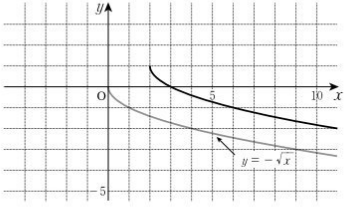
153

(3)



$x \geqq -2$

(4)

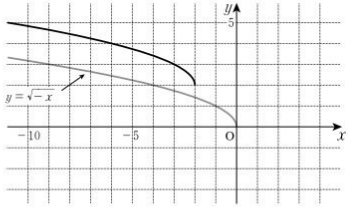


$x \geqq 2$

$y \leqq 1$

154

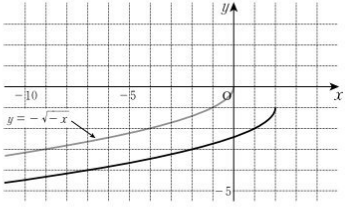
(3)



$x \leqq -2$

$y \geqq 2$

(4)

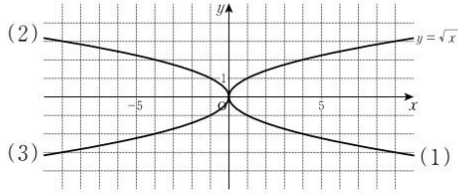


$x \leqq 2$

$y \leqq -1$

155

1.



2.

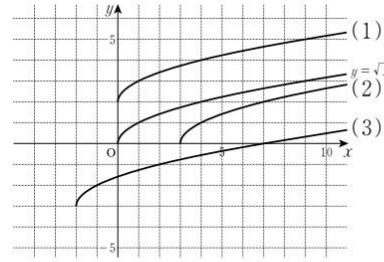
(1) y-axis

(2) x-axis

(3) y-axis

156

1.



2.

(1) 2

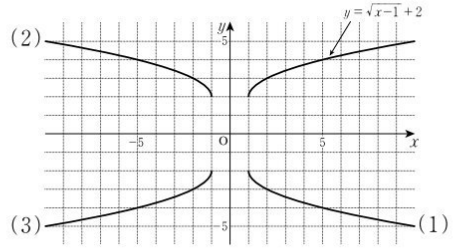
(2) 3

(3) -2

-3

155

3.



4.

(1) x-axis

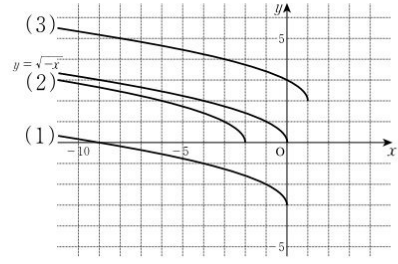
(2) y-axis

(3) x-axis

(4) y-axis

156

3.



4.

(1) -3

(2) -2

(3) 1

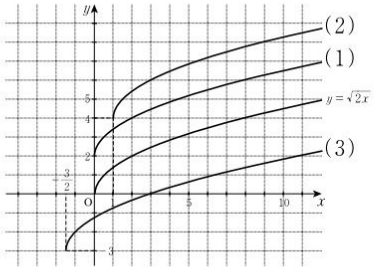
2

K 157−160

157

1.

(3) $\boxed{\frac{3}{2}}$



2.

(1) $\boxed{2}$

(2) $\boxed{4}$

(3) $\boxed{-\frac{3}{2}}$ $\boxed{-3}$

158

1.

(1) $\boxed{-2}$

(2) -3 units along the x-axis

(3) 2 units along the x-axis, and 3 units along the y-axis

2.

(1) 2 units along the x-axis, and 5 units along the y-axis

(2) -10 units along the y-axis

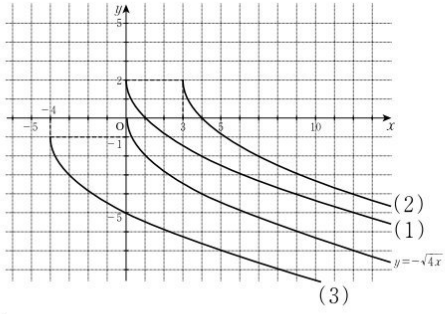
(3) $-\frac{2}{5}$ units along the x-axis, and -3 units along the y-axis

157

3.

(2) $\boxed{3}$

(3) $-\sqrt{4(x+4)}-1$



4.

(1) $\boxed{2}$

(2) $\boxed{3}$ $\boxed{2}$

(3) $\boxed{-4}$ $\boxed{-1}$

158

3.

(1) $y=\sqrt{x}+3$

(2) $y=\sqrt{x+2}$

(3) $y=\sqrt{x-2}-3$

4.

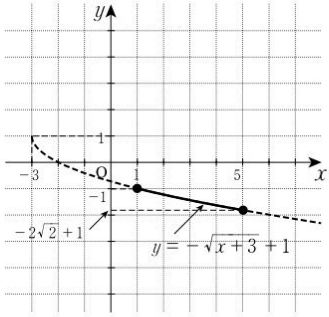
(1) $y=\sqrt{-3x}-1$

(2) $y=\sqrt{-3x+3}$

(3) $y=\sqrt{-3x-1}+5$

159

(1)

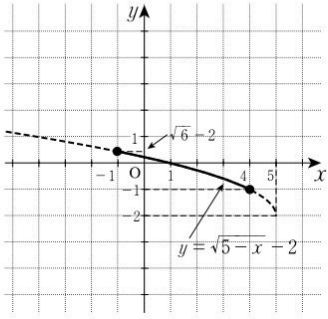


Maximum value: $f(1) = -1$

Minimum value: $f(5) = -2\sqrt{2}+1$

159

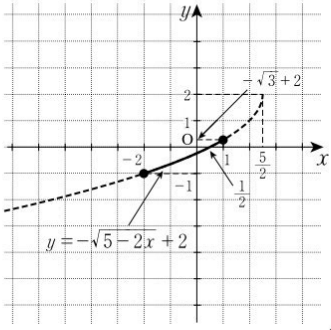
(2)



Maximum value: $f(-1) = \sqrt{6}-2$

Minimum value: $f(4) = -1$

(3)



Maximum value: $f(1) = -\sqrt{3}+2$

Minimum value: $f(-2) = -1$

160

1.

(1) (D)　(4) (B)

(2) (C)　(5) (E)

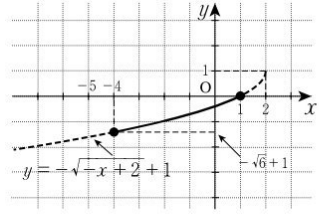
(3) (F)　(6) (A)

160

2.

$y = \sqrt{2x-2} - 2$

3.



Maximum value: $f(1) = 0$

Minimum value: $f(-4) = -\sqrt{6}+1$

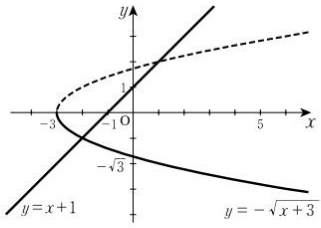
K 161−164

161

Ex.

162

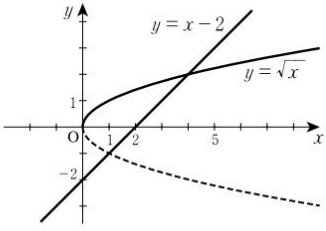
(1)



$x=-2$

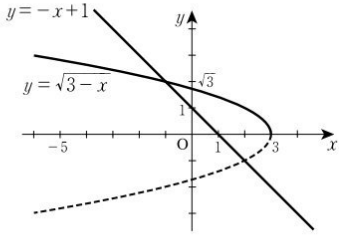
161

(1)



(4, 2)

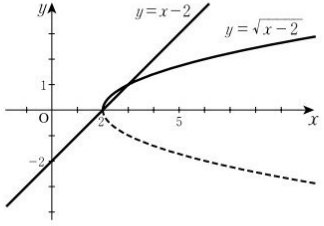
(2)



(−1, 2)

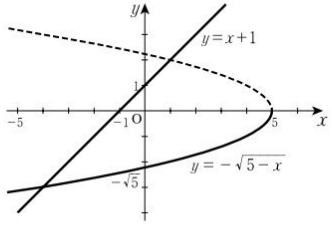
162

(2)



$x=3,\ 2$

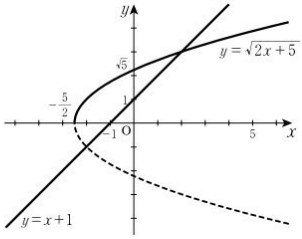
(3)



$x=-4$

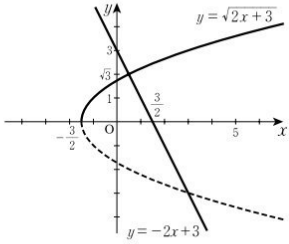
163

(1)



$x=2$

(2)



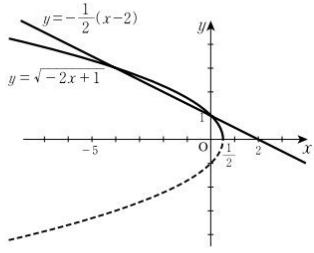
$x=\dfrac{1}{2}$

164

(1) $x=1$

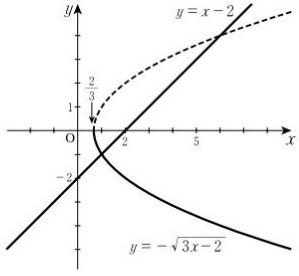
163

(3)



$x=0,\ -4$

(4)



$x=1$

164

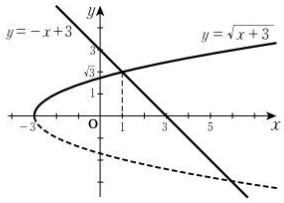
(2) $x=5$

(3) $x=-2,\ 1$

K 165−168

165

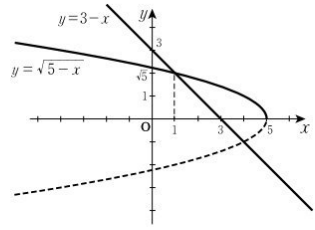
(1)



$-3 \leqq x < 1$

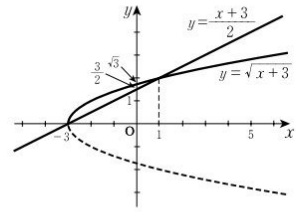
166

(1)



$x < 1$

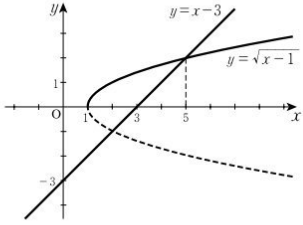
(2)



$-3 < x < 1$

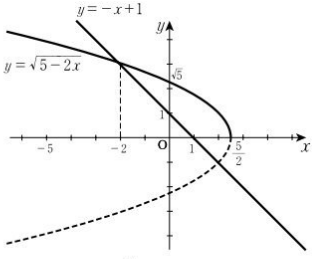
165

(2)



$x > 5$

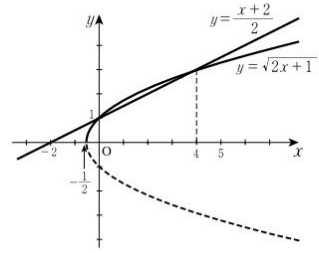
(3)



$-2 < x \leqq \dfrac{5}{2}$

166

(3)



$0 < x < 4$

(4) $-\dfrac{1}{2} \leqq x < 0,\ x > 4$

167

(1) $x>4$

168

1.

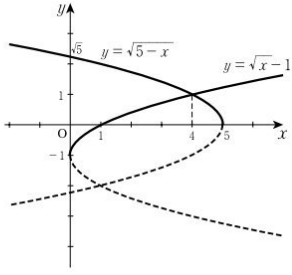
(1) $x>1$

(2) $-4\leqq x<4$

(3) $1<x<4$

167

(2)

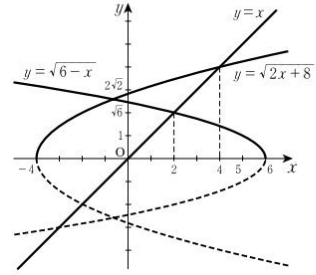


$0\leqq x<4$

(3) $4<x\leqq 5$

168

2.



$2<x<4$

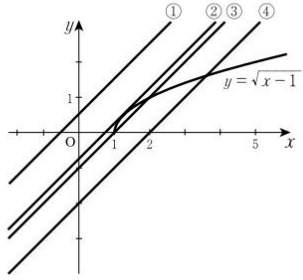
K 169−172

169

Ex.

169

1.



When $k>-\frac{3}{4}$,

there are 0 real solutions.

When $k=-\frac{3}{4}$,

there is 1 real solution.

When $-1\leqq k<-\frac{3}{4}$,

there are 2 real solutions.

When $k<-1$,

there is 1 real solution.

170

1.

(1) $x=-1$

(2) $x=-\frac{1}{2}$

170

2.

$-2\leqq x<\frac{5}{2}$

171

1.

(1) a^9

(2) a^5

(3) $\dfrac{1}{a^5}$

(4) 1

(5) a^{15}

(6) a^3b^3

(7) $a^{10}b^{15}$

(8) $-27a^9b^6$

(9) $16a^{16}b^{20}$

(10) $\dfrac{a^3}{b^3}$

(11) $\dfrac{b^4c^8}{a^{12}}$

(12) $-\dfrac{32b^5c^{10}}{243a^{15}}$

172

1.

(1) $a^{\boxed{-5}}=\dfrac{1}{a^5}$

(2) a^9

(3) $\dfrac{1}{a^3}$

(4) a^4

(5) $\dfrac{1}{a^4}$

(6) 1

(7) $\dfrac{1}{a^3}$

171

2.

(1) $\dfrac{1}{4}$

(2) $\dfrac{1}{81}$

(3) 1

(4) $\dfrac{1}{5}$

(5) $\dfrac{1}{32}$

(6) 1

3.

(1) 1

(2) $2^{\boxed{6}}=64$

(3) $2^{\boxed{-6}}=\dfrac{1}{64}$

(4) 128

(5) $\dfrac{1}{8}$

(6) 27

(7) 8

(8) 32

172

2.

(1) $\dfrac{1}{27}$

(2) 4

(3) 4

(4) $\dfrac{1}{8}$

(5) $\dfrac{1}{4}$

(6) $\dfrac{1}{4}$

(7) $\dfrac{1}{144}$

(8) 8

K 173−176

173

1.

(1) 8
(2) 16
(3) 32
(4) 64
(5) 128
(6) 256
(7) −27
(8) 81
(9) −243
(10) 729
(11) −64
(12) 256
(13) 125
(14) 625
(15) 216
(16) −343

174

1.

(1) 4
(2) ±4
(3) 5
(4) ±5
(5) 2
(6) ±2
(7) 2
(8) 2
(9) −2
(10) −2
(11) 2
(12) −2

173

2.

(1) 5
(2) 3
(3) −3
(4) 4
(5) 5
(6) 6
(7) 2
(8) 3
(9) 5
(10) 2
(11) 2
(12) −2
(13) −3
(14) 4
(15) −4
(16) −5
(17) −2
(18) −2

174

2.

(1) 10
(2) 20
(3) 0.1
(4) 0.1
(5) 16
(6) 4
(7) 125
(8) 16

175

(1) $\sqrt{5}$

(2) 64

(3) $-\frac{1}{2}$

(4) $\frac{4}{5}$

(5) -2

(6) -2

(7) 2

(8) -27

176

1.

(1) 4

(2) $\boxed{2}$

(3) 6

(4) 2

(5) 8

(6) $\sqrt{2}$

(7) $\frac{1}{2}$

(8) $-\frac{1}{2}$

175

(9) 4

(10) 2

(11) 3

(12) 2

(13) 5

(14) $\frac{1}{3}$

(15) $\frac{1}{2}$

(16) $\boxed{2}$

(17) $\sqrt[3]{4}$

176

2.

(1) a^2

(2) $-a^3$

(3) $-a^2$

(4) $2a$

(5) $\frac{a}{2}$

(6) a^4

(7) $\sqrt[3]{a}$

(8) $\sqrt[3]{4a}$

K 177−180

177

1.

(1) $\sqrt{a}$

(2) $\sqrt[4]{a}$

(3) $\sqrt[3]{a^2}$

(4) $\dfrac{1}{\sqrt[5]{a}}$

(5) $\dfrac{1}{\sqrt[4]{a^3}}$

(6) $a^{\frac{1}{2}}$

(7) $a^{\frac{1}{5}}$

(8) $a^{\frac{3}{4}}$

(9) $x^{-\frac{1}{4}}$

(10) $x^{-\frac{2}{3}}$

178

(1) 2

(2) 3

(3) $\dfrac{1}{2}$

(4) $\dfrac{1}{4}$

(5) $\dfrac{3}{2}$

(6) 4

(7) $\dfrac{1}{16}$

177

2.

(1) 3

(2) 8

(3) 16

(4) $\dfrac{1}{4}$

(5) $\dfrac{1}{27}$

(6) $\dfrac{1}{16}$

(7)* 16

(8) $-\dfrac{2}{3}$

(9) $\dfrac{1}{4}$

(10) $\dfrac{1}{9}$

178

(8) 8

(9) 1

(10) $\dfrac{27}{5}$

(11) $-\dfrac{2}{3}$

(12) 54

(13) $(2^{\frac{1}{2}})^{\boxed{2}}$, $(2^{-\frac{1}{2}})^{\boxed{2}}$, $\dfrac{9}{2}$

(14) $\dfrac{4}{3}$

(15) $\dfrac{24}{5}$

179

(1) $a^{\boxed{-4}}$

(2) $a^{\boxed{\frac{1}{3}}}$

(3) $a^{-\frac{5}{3}}$

(4) $a^{\frac{3}{2}}$

(5) $a^{\frac{5}{6}}$

(6) $a^{\frac{13}{12}}$

(7) $a^{\frac{1}{6}}$

(8) a^4

180

(1) 12

(2) $\frac{1}{4}$

(3) 4

(4) $\frac{1}{8}$

(5) $\frac{1}{8}$

(6) $\frac{1}{16}$

(7) $\sqrt{2}$

179

(9) $a^{\frac{2}{3}}$

(10) $a^{\frac{3}{4}}$

(11) $a^{-\frac{1}{2}}$

(12) $a^{-\frac{5}{3}}$

(13) $a^{\frac{7}{6}}$

(14) $x^{\boxed{2}}y^{\boxed{-3}}$

(15) $x^{\frac{1}{3}}y^{\frac{3}{4}}$

(16) $x^{\frac{2}{3}}y^{-\frac{3}{2}}$

180

(8) $a^{\frac{7}{6}}$ $\left(=\sqrt[6]{a^7}\right)$

(9) a^2

(10) $a^{-\frac{3}{10}}$ $\left(=\frac{1}{\sqrt[10]{a^3}}\right)$

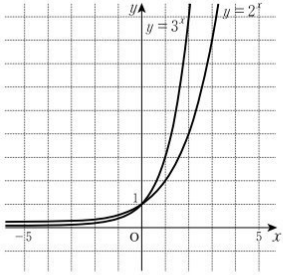
(11) $a^{\frac{7}{6}}$ $\left(=\sqrt[6]{a^7}\right)$

K 181−184

181

(1)

x	y
-2	$\frac{1}{9}$
$-\frac{3}{2}$	$\frac{\sqrt{3}}{9}$
-1	$\frac{1}{3}$
$-\frac{1}{2}$	$\frac{\sqrt{3}}{3}$
0	1
$\frac{1}{2}$	$\sqrt{3}$
1	3
$\frac{3}{2}$	$3\sqrt{3}$
2	9

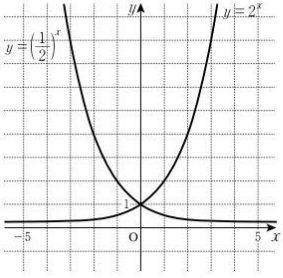


x

181

(2)

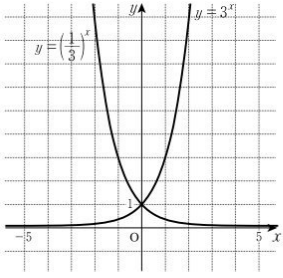
x	y
-3	8
-2	4
$-\frac{3}{2}$	$2\sqrt{2}$
-1	2
$-\frac{1}{2}$	$\sqrt{2}$
0	1
$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$
1	$\frac{1}{2}$
$\frac{3}{2}$	$\frac{\sqrt{2}}{4}$
2	$\frac{1}{4}$
3	$\frac{1}{8}$



x

(3)

x	y
-2	9
$-\frac{3}{2}$	$3\sqrt{3}$
-1	3
$-\frac{1}{2}$	$\sqrt{3}$
0	1
$\frac{1}{2}$	$\frac{\sqrt{3}}{3}$
1	$\frac{1}{3}$
$\frac{3}{2}$	$\frac{\sqrt{3}}{9}$
2	$\frac{1}{9}$

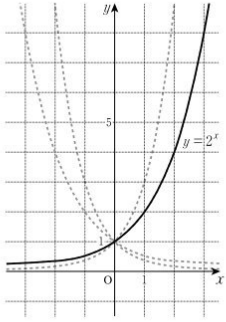


x

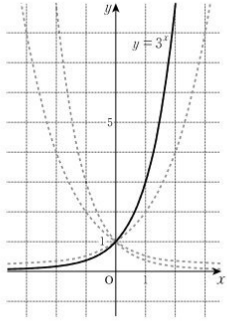
182

1.

(1)



(2)



2.

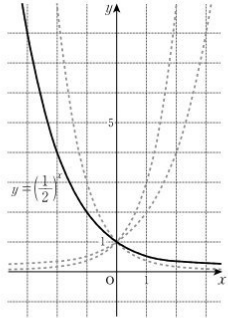
(1) 1

(2) below

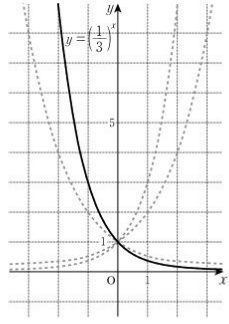
182

3.

(1)



(2)



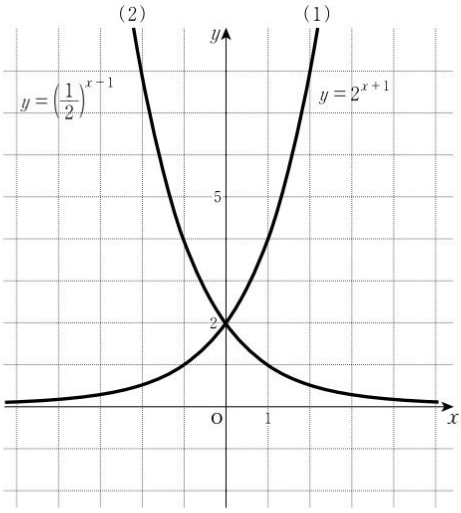
4.

(1) below

(2) 1

(3) above

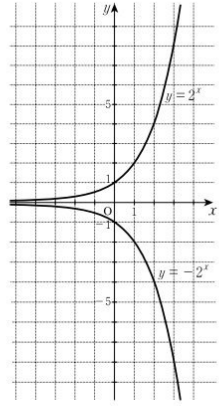
183



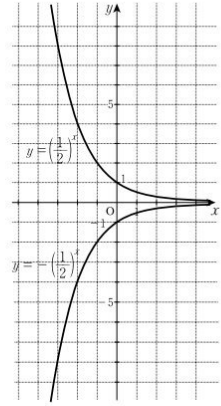
184

1.

(1)



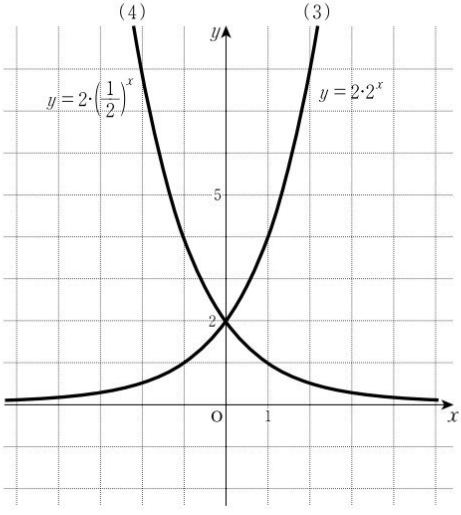
(2)



2.

(1) x

183



184

3.

(1) (B)

(2) (A)

(3) (D)

(4) (C)

4.

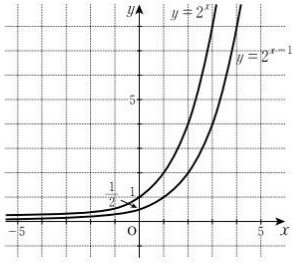
(1) y

(2) x

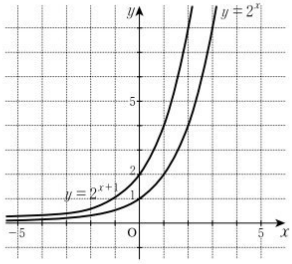
K 185−188

185

(1)



(2)



[−1]

186

1.

(1) [2]

(2) $3^{\boxed{x+1}}$, [−1]

(3) $3^{\boxed{x-1}}$, [1]

(4) [−2] [1]

2.

(1) 2 units along the x-axis

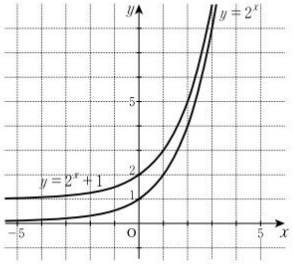
(2) -2 units along the y-axis

(3) 1 unit along the x-axis

(4) -2 units along the x-axis, and 2 units along the y-axis

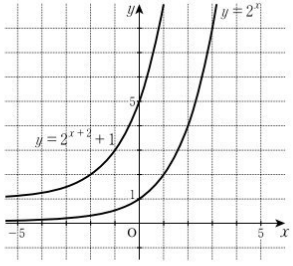
185

(3)



[1]

(4)



[−2]

[1]

186

3.

(1) $2^{\boxed{x-1}}$

(2) $y=2^x-2$

(3) $y=2^{x-2}-1$

(4) $y=2^{x+1}+2$

4.

(1) $y=\left(\frac{1}{3}\right)^x+1$

(2) $y=\left(\frac{1}{3}\right)^{x+1}$

(3) $y=\left(\frac{1}{3}\right)^{x-1}+3$

(4) $y=\left(\frac{1}{3}\right)^{x+3}-1$

187

1.

(1) $\sqrt[5]{16} < \sqrt[7]{64}$

(2) $\sqrt[3]{3} < \sqrt[7]{27} < \sqrt[4]{9}$

188

1.

(1) $\sqrt[12]{27} < \sqrt[8]{25}$

(2) $\sqrt[12]{81} < \sqrt[9]{125} < \sqrt[6]{36}$

187

2.

(1) $\frac{1}{9} < \sqrt[3]{\frac{1}{3}}$

(2) $\sqrt{\frac{1}{2}} < 0.5^{\frac{1}{3}} < 0.5^{-2}$

188

2.

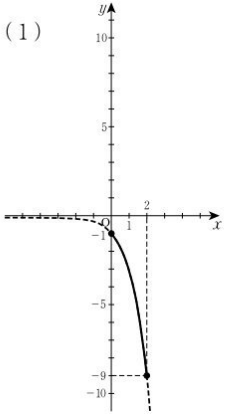
(1) $\sqrt[6]{7} < \sqrt[3]{5} < \sqrt{3}$

(2) $\sqrt{2} < \sqrt[3]{3} < \sqrt[4]{5}$

K 189−192

189

(1)



Maximum value: $f(0) = -1$

Minimum value: $f(2) = -9$

190

1.

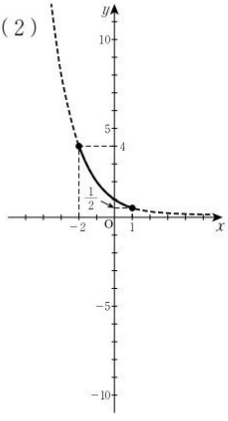
(1) (E)　　(4) (A)

(2) (C)　　(5) (D)

(3) (F)　　(6) (B)

189

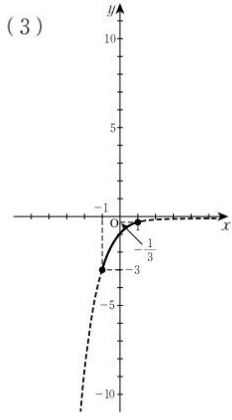
(2)



Maximum value:
$f(-2) = 4$

Minimum value:
$f(1) = \dfrac{1}{2}$

(3)



Maximum value:
$f(1) = -\dfrac{1}{3}$

Minimum value:
$f(-1) = -3$

190

2.

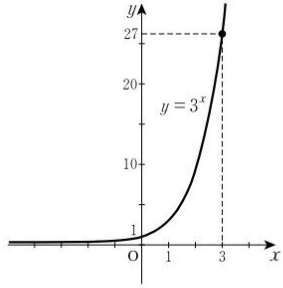
(1) -1 unit along the x-axis

(2) 1 unit along the x-axis

3. $0.25 < \sqrt{\dfrac{1}{2}} < \sqrt[3]{4} < \left(\dfrac{1}{2}\right)^{-2}$

191

(1) $x=3$



192

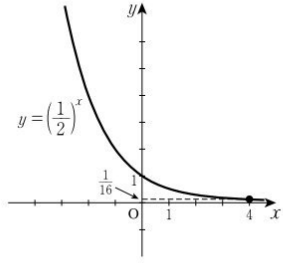
1.

(1) $x=\frac{3}{2}$　　(3) $x=-\frac{2}{3}$

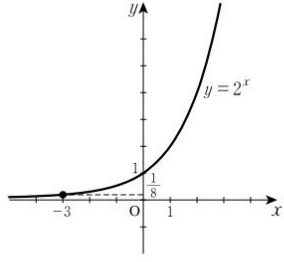
(2) $x=\frac{3}{4}$　　(4) $x=-\frac{1}{4}$

191

(2) $x=4$



(3) $x=-3$



192

2.

(3) $x=\frac{2}{3}$

(1) $x=-1$　　(4) $x=3$

(2) $x=2$　　(5) $x=-\frac{1}{2}$

K 193−196

193	194
(2) $x=-\frac{1}{3}$ (1) $x=-\frac{1}{2}$ (3) $x=\frac{3}{8}$	(1) $x=2$
193	**194**
(4) $x=-\frac{2}{9}$ (6) $x=-\frac{1}{3}$ (5) $x=-1$ (7) $x=\frac{1}{2}$	(2) $x=2,\ 1$ (3) $x=-1$

195

1.

(1) $x=2$　　(2) $x=-\frac{1}{2}$, 1

196

1.

(1) $x<2$　　(3) $x\leqq 4$

(2) $x>\frac{3}{4}$　　(4) $x\leqq -\frac{3}{2}$

195

2.

(1) $\begin{cases} x=2 \\ y=1 \end{cases}$

196

2.

(1) $x>\frac{3}{4}$　　(3) $x<2$

(2) $x\leqq \frac{1}{2}$　　(4) $x\leqq \frac{5}{3}$

K 197−200

197

(1) $x > 2$

198

1.

(1) The maximum value,
when $x = 1$, is 3.

The minimum value,
when $x = -1$, is $\frac{3}{2}$.

197

(2) $1 < x < 2$ (3) $x \geqq -1$

198

2.

(1) The maximum value,
when $x = 1$, is 8.

The minimum value,
when $x = -1$, is $-\frac{13}{4}$.

199

(1) The maximum value,
when $x = 2$, is 1.

The minimum value,
when $x = 1$, is -3.

200

1.
(1) $x = \frac{3}{4}$ (3) $x < -1$

(2) $x = 2$ (4) $x > 2$

199

(2) The maximum value,
when $x = 1$, is 7.

The minimum value,
when $x = -1$, is $\frac{1}{4}$.

(3) The maximum value,
when $x = 0$, is 5.

The minimum value,
when $x = 1$, is 1.

200

2.
The maximum value,
when $x = 0$, is 5.

The minimum value,
when $x = 1$, is 4.